

IceCube M&O Staffing Matrix sort by WBS v19.1 2015.1115.xls

| WBS L2 | WBS L3 | US / Non-US | Institution | Lab or Cat. | Names | Tasks | Source of Funds (U.S. Only) | NSF M&O Core | NSF Base Grants | U.S. Institutional In-Kind | Europe & Asia Pacific In-Kind | Grand Total |
|------------------------|----------------------|-------------|-----------------|-------------|------------------------------|---|-----------------------------|--------------|-----------------|----------------------------|-------------------------------|-------------|
| 2.1 Program Management | 2.1.1 Administration | US | LBNL | KE | KLEIN,SPENCER | Supervise LBNL effort | NSF M&O Core | 0.05 | | | | 0.05 |
| 2.1 Program Management | 2.1.1 Administration | US | LBNL | KE | KLEIN,SPENCER | PINGU Coordination Committee | US In-Kind | | | 0.03 | | 0.03 |
| 2.1 Program Management | 2.1.1 Administration | US | LBNL | KE | KLEIN,SPENCER | Gen2 HEA/Surface working group | US In-Kind | | | 0.05 | | 0.05 |
| 2.1 Program Management | 2.1.1 Administration | US | UWRF | KE | MADSEN, JIM | Associate Director for E&O | NSF M&O Core | 0.50 | | | | 0.50 |
| 2.1 Program Management | 2.1.1 Administration | US | DREXEL | KE | NEILSON, NAKO | ICB member | US In-Kind | | | 0.05 | | 0.05 |
| 2.1 Program Management | 2.1.1 Administration | US | MSU | KE | DEYOUNG, TYCE | Deputy Spokesperson | US In-Kind | | | 0.25 | | 0.25 |
| 2.1 Program Management | 2.1.1 Administration | US | UCB | SC | FILIMONOV, KIRILL | Pubcom member | Base Grants | | 0.10 | | | 0.10 |
| 2.1 Program Management | 2.1.1 Administration | US | UCB | SC | WOSCHNAGG, KURT | Speakers Comm member | Base Grants | | 0.10 | | | 0.10 |
| 2.1 Program Management | 2.1.1 Administration | US | UCB | SC | WOSCHNAGG, KURT | Pubcom member | Base Grants | | 0.10 | | | 0.10 |
| 2.1 Program Management | 2.1.1 Administration | US | UD | KE | GAISSER, TOM | ExecCom member | US In-Kind | | | 0.20 | | 0.20 |
| 2.1 Program Management | 2.1.1 Administration | US | UD | KE | STANEV, TODOR | Pubcom member | US In-Kind | | | 0.10 | | 0.10 |
| 2.1 Program Management | 2.1.1 Administration | US | UD | KE | EVENSON, PAUL | Managing solar and heliospheric aspects of IceTop | US In-Kind | | | 0.05 | | 0.05 |
| 2.1 Program Management | 2.1.1 Administration | US | UMD | KE | SULLIVAN, GREG | ExecCom member | US In-Kind | | | 0.20 | | 0.20 |
| 2.1 Program Management | 2.1.1 Administration | US | UMD | KE | SULLIVAN, GREG | M&O/Upgrade planning | US In-Kind | | | 0.30 | | 0.30 |
| 2.1 Program Management | 2.1.1 Administration | US | UMD | SC | BLAUFUSS, ERIK | Analysis Coordinator | Base Grants | | 0.25 | | | 0.25 |
| 2.1 Program Management | 2.1.1 Administration | US | UMD | SC | BLAUFUSS, ERIK | Analysis Coordinator | NSF M&O Core | 0.15 | | | | 0.15 |
| 2.1 Program Management | 2.1.1 Administration | US | SBU | KE | KIRYLUK,JOANNA | Simulation Prod. Comm member, ICB member | US In-Kind | | | 0.05 | | 0.05 |
| 2.1 Program Management | 2.1.1 Administration | US | UW | KE | HALZEN, FRANCIS | Principle Investigator | NSF M&O Core | 0.38 | | | | 0.38 |
| 2.1 Program Management | 2.1.1 Administration | US | UW | KE | HALZEN, FRANCIS | Principle Investigator | US In-Kind | | | 0.12 | | 0.12 |
| 2.1 Program Management | 2.1.1 Administration | US | UW | KE | KARLE, ALBRECHT | Associate Director for Science | NSF M&O Core | 0.38 | | | | 0.38 |
| 2.1 Program Management | 2.1.1 Administration | US | UW | KE | KARLE, ALBRECHT | ExecCom member | US In-Kind | | | 0.20 | | 0.20 |
| 2.1 Program Management | 2.1.1 Administration | US | UW | KE | HANSON, KAE | Director of IceCube Maintenance and Operations | NSF M&O Core | 0.47 | | | | 0.47 |
| 2.1 Program Management | 2.1.1 Administration | US | UW | KE | HANSON, KAE | Director of IceCube Maintenance and Operations | US In-Kind | | | 0.08 | | 0.08 |
| 2.1 Program Management | 2.1.1 Administration | US | UW | KE | VANDENBROUCKE, JUSTIN | Pubcom member | US In-Kind | | | 0.10 | | 0.10 |
| 2.1 Program Management | 2.1.1 Administration | US | UW | MA | PELES, ADI | IceCube Resource Coordinator | NSF M&O Core | 0.15 | | | | 0.15 |
| 2.1 Program Management | 2.1.1 Administration | US | UW | AD | VAKHNINA, CATHERINE | IceCube Resource Coordinator | NSF M&O Core | 0.75 | | | | 0.75 |
| 2.1 Program Management | 2.1.1 Administration | US | US Total | | | | | 2.83 | 0.55 | 1.78 | | 5.16 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | ALBERTA | KE | GRANT, DARREN | Pubcom Chair | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | DESY | KE | KOWALSKI, MAREK | ExecCom member | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | DESY | KE | ACKERMANN, MARKUS | PubCom member | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | DPNC | KE | MONTARULI, TERESA | ICB Member, UHECR'neutrino coordinator | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | ERLANGEN | KE | KAPPES, ALEXANDER | Pubcom member | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | NBI | KE | KOSKINEN, JASON | Fall Collaboration Meeting | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | SKKU | KE | ROTT, CARSTEN | Speakers Comm member | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | SU | KE | FINLEY, CHAD | ICB Member | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | SU | KE | HULTQVIST, KLAS | ICB Member | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | SU | KE | FINLEY, CHAD | Coordination with LIGO | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | SU | KE | WALCK, CHRISTIAN | Publications Bookkeeping | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | UC | KE | ADAMS, JENNI | ICB Member | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | UOX | KE | SARKAR, SUBIR | Pubcom member | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | ULB | KE | AGUILAR SANCHEZ JUAN ANTONIO | Institutional Lead | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | UU | KE | BOTNER, OLGA | Spokesperson | Non-US In-kind | | | | 0.50 | 0.50 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | UU | KE | BOTNER, OLGA | ExecCom member | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | UU | KE | DE LOS HEROS, CARLOS | Pubcom member | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | UU | KE | HALLGREN, ALLAN | Speakers Comm member | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | IVUB | KE | DE CLERCQ, CATHERINE | Institutional Lead | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | WUPPERTAL | KE | HELBING, KLAUS | Speakers Comm member | Non-US In-kind | | | | 0.10 | 0.10 |

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|------------------------|-----------------------------|----------------------------|-------------|-------------|-----------------------|---|-----------------------------|--------------|-----------------|----------------------------|-------------------------------|-------------|
| 2.1 Program Management | 2.1.1 Administration | Non-US | RWTH | KE | WIEBUSCH, CHRISTOPHER | ExecCom member | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | RWTH | KE | WIEBUSCH, CHRISTOPHER | Pubcom member | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.1 Administration | Non-US | MAINZ | KE | KOPKE, LUTZ | Supernova group Co-Chair | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.1 Program Management | 2.1.1 Administration | Non-US Non-US Total | | | | | | | | | 3.45 | 3.45 |
| 2.1 Program Management | 2.1.1 Administration | WBS L3 | | | | | | 2.83 | 0.55 | 1.78 | 3.45 | 8.61 |
| 2.1 Program Management | 2.1.2 Engineering Support | US | MIT | KE | CONRAD, JANET | Test beam development | US In-Kind | | | 0.05 | | 0.05 |
| 2.1 Program Management | 2.1.2 Engineering Support | US | MIT | KE | CONRAD, JANET | mTOM development | US In-Kind | | | 0.05 | | 0.05 |
| 2.1 Program Management | 2.1.2 Engineering Support | US | MIT | GR | AXANI, SPENCER | MIT OMI development and expertise in PINGU | US In-Kind | | | 0.20 | | 0.20 |
| 2.1 Program Management | 2.1.2 Engineering Support | US | PSU | KE | COWEN, DOUG | PINGU Co-Lead | US In-Kind | | | 0.35 | | 0.35 |
| 2.1 Program Management | 2.1.2 Engineering Support | US | OSU | KE | BEATTY, JAMES | PINGU Electronics and Calibration Development | US In-Kind | | | 0.10 | | 0.10 |
| 2.1 Program Management | 2.1.2 Engineering Support | US | OSU | PO | ANDERSON, TYLER | PINGU Electronics and Calibration Development | US In-Kind | | | 0.25 | | 0.25 |
| 2.1 Program Management | 2.1.2 Engineering Support | US | UMD | KE | HOFFMAN, KARA | Detector R&D | US In-Kind | | | 0.20 | | 0.20 |
| 2.1 Program Management | 2.1.2 Engineering Support | US | UMD | GR | SONG, MING | Detector R&D | Base Grants | | 0.50 | | | 0.50 |
| 2.1 Program Management | 2.1.2 Engineering Support | US | UW | SC | DUVERNOIS, MICHAEL | Specialized simulations, designing new filters, unusual data selections, extracting specialized information | NSF M&O Core | 0.25 | | | | 0.25 |
| 2.1 Program Management | 2.1.2 Engineering Support | US | UW | SC | DUVERNOIS, MICHAEL | Ongoing EMI studies & mitigation, South Pole & Northern test site instrumentation, Summer South Pole field work | NSF M&O Core | 0.25 | | | | 0.25 |
| 2.1 Program Management | 2.1.2 Engineering Support | US | UW | EN | MEURES, THOMAS | Engineering Support: IceCube Lab Summer operations, cabling, & instrumentation testing | NSF M&O Core | 0.25 | | | | 0.25 |
| 2.1 Program Management | 2.1.2 Engineering Support | US | UW | EN | SANDSTROM, PERRY | Engineering support: IceCube Lab Summer operations, fieldwork management, GPS & timing maintenance | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.1 Program Management | 2.1.2 Engineering Support | US | UW | MA | HAUGEN, JAMES | Engineering Support: logistics, northern hemisphere testing, & vendor management, contractor POC | NSF M&O Core | 0.15 | | | | 0.15 |
| 2.1 Program Management | 2.1.2 Engineering Support | US | Yale | KE | MARUYAMA, REINA | Gen2 R&D | US In-Kind | | | 0.05 | | 0.05 |
| 2.1 Program Management | 2.1.2 Engineering Support | US US Total | | | | | | 1.10 | 0.50 | 1.25 | | 2.85 |
| 2.1 Program Management | 2.1.2 Engineering Support | Non-US | DESY | KE | NAHNHAUER, ROLF | Surface electronics, Optical detector R&D | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.2 Engineering Support | Non-US | DESY | KE | KARG, TIMO | Surface electronics, Optical detector R&D | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.2 Engineering Support | Non-US | DESY | SC | YANEZ, JUAN-PABLO | Optical detector R&D | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.2 Engineering Support | Non-US | ALBERTA | KE | GRANT, DARREN | PINGU Co-Lead | Non-US In-kind | | | | 0.35 | 0.35 |
| 2.1 Program Management | 2.1.2 Engineering Support | Non-US | ALBERTA | KE | KOPPER, CLAUDIO | Lead in-ice high-energy extension | Non-US In-kind | | | | 0.15 | 0.15 |
| 2.1 Program Management | 2.1.2 Engineering Support | Non-US | HUMBOLDT | GR | HEBECKER, DUSTIN | Optical detector calibration & R&D | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.2 Engineering Support | Non-US | MAINZ | KE | BOSSER, SEBASTIAN | PINGU software coordinator | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.1 Program Management | 2.1.2 Engineering Support | Non-US | RWTH | PO | AUFFENBERG, JAN | Surface detectors Performance & Simulation | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.2 Engineering Support | Non-US | SKKU | PO | BOSE, DEBANJAN | Reconstruction tools | Non-US In-kind | | | | 0.15 | 0.15 |
| 2.1 Program Management | 2.1.2 Engineering Support | Non-US | ULB | PO | O'MURCHADHA, AONGUS | EMI Measurements | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.2 Engineering Support | Non-US | GENT | SC | UGENT SC | Acoustic R&D Support | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.1 Program Management | 2.1.2 Engineering Support | Non-US | GENT | GR | UGENT GR | Acoustic R&D Support | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.1 Program Management | 2.1.2 Engineering Support | Non-US Non-US Total | | | | | | | | | 1.60 | 1.60 |
| 2.1 Program Management | 2.1.2 Engineering Support | WBS L3 | | | | | | 1.10 | 0.50 | 1.25 | 1.60 | 4.45 |

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|---------------------------------------|---|---------------|---------------------|-------------|------------------------|--|-----------------------------|--------------|-----------------|----------------------------|-------------------------------|--------------|
| 2.1 Program Management | 2.1.3 Usap Support | US | UW | MA | HAUGEN, JAMES | USAP Support: yearly sip, coordination with contractor (ASC) | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.1 Program Management | 2.1.3 Usap Support | US | US Total | | | | | 0.20 | | | | 0.20 |
| 2.1 Program Management | 2.1.3 Usap Support | | WBS L3 | | | | | 0.20 | | | | 0.20 |
| 2.1 Program Management | 2.1.4 Education & Outreach | US | PSU | KE | COWEN, DOUG | Education & Outreach | US In-Kind | | | 0.05 | | 0.05 |
| 2.1 Program Management | 2.1.4 Education & Outreach | US | MSU | KE | DEYOUNG, TYCE | Education & Outreach | US In-Kind | | | 0.05 | | 0.05 |
| 2.1 Program Management | 2.1.4 Education & Outreach | US | SDSMT | KE | XINHUA, BAI | Education & Outreach | US In-Kind | | | 0.05 | | 0.05 |
| 2.1 Program Management | 2.1.4 Education & Outreach | US | UCB | KE | PRICE, BUFORD | Education & Outreach | US In-Kind | | | 0.10 | | 0.10 |
| 2.1 Program Management | 2.1.4 Education & Outreach | US | UD | PO | DEMBINSKI, HANS | MasterClass lead | US In-Kind | | | 0.10 | | 0.10 |
| 2.1 Program Management | 2.1.4 Education & Outreach | US | UMD | KE | UMD KE | Education & Outreach | US In-Kind | | | 0.10 | | 0.10 |
| 2.1 Program Management | 2.1.4 Education & Outreach | US | UW | AD | BRAVO GALLART, SILVIA | Communication plan manager, science writer. Masterclass and communication workshop coordinator | NSF M&O Core | 0.25 | | | | 0.25 |
| 2.1 Program Management | 2.1.4 Education & Outreach | US | UW | AD | MADSEN, MEGAN | E&O events and collaboration meetings mgmt. Website & social networks mgmt | NSF M&O Core | 0.75 | | | | 0.75 |
| 2.1 Program Management | 2.1.4 Education & Outreach | US | UW | RI | BECHTOL, ELLEN | Evaluation support: framework design and implementation for BI program | NSF M&O Core | 0.35 | | | | 0.35 |
| 2.1 Program Management | 2.1.4 Education & Outreach | US | UWRF | KE | MADSEN, JIM | Teachers program and UWRF Upward Bound | NSF M&O Core | 0.10 | | | | 0.10 |
| 2.1 Program Management | 2.1.4 Education & Outreach | US | US Total | | | | | 1.45 | 0.00 | 0.45 | | 1.90 |
| 2.1 Program Management | 2.1.4 Education & Outreach | Non-US | NBI | KE | KOSKINEN, JASON | MasterClass (IceCube and NBI) | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.4 Education & Outreach | Non-US | NBI | GR | MEDICI, MORTEN | MasterClass (IceCube and NBI) | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.1 Program Management | 2.1.4 Education & Outreach | Non-US | UU | KE | HALLGREN, ALLAN | Education & Outreach | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.1 Program Management | 2.1.4 Education & Outreach | Non-US | UU | KE | BOTNER, OLGA | Education & Outreach | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.1 Program Management | 2.1.4 Education & Outreach | Non-US | SKKU | KE | ROTT, CARSTEN | Education & Outreach | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.1 Program Management | 2.1.4 Education & Outreach | Non-US | Non-US Total | | | | | | | | 0.35 | 0.35 |
| 2.1 Program Management | 2.1.4 Education & Outreach | | WBS L3 | | | | | 1.45 | 0.00 | 0.45 | 0.35 | 2.25 |
| 2.1 Program Management | WBS L2 Total | | | | | | | 5.58 | 1.05 | 3.48 | 5.40 | 15.51 |
| 2.2 Detector Operations & Maintenance | 2.2 Detector Operations & Maintenance | US | UW | SC | KELLEY, JOHN | Detector Maintenance and Operations Manager | NSF M&O Core | 0.65 | | | | 0.65 |
| 2.2 Detector Operations & Maintenance | 2.2 Detector Operations & Maintenance | US | UW | SC | DESIATI, PAOLO | IceCube Coordination Committee chair | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.2 Detector Operations & Maintenance | 2.2 Detector Operations & Maintenance | US | UMD | EN | HAUGEN, JAMES | Logistics Manager | NSF M&O Core | 0.15 | | | | 0.15 |
| 2.2 Detector Operations & Maintenance | 2.2 Detector Operations & Maintenance | US | UMD | SC | OLIVAS, ALEX | SW Coordinator – Detector M&O | NSF M&O Core | 0.45 | | | | 0.45 |
| 2.2 Detector Operations & Maintenance | 2.2 Detector Operations & Maintenance | US | US Total | | | | | 1.45 | 0.00 | 0.00 | | 1.45 |
| 2.2 Detector Operations & Maintenance | 2.2 Detector Operations & Maintenance | Non-US | UMH | GR | KOHNEN, GEORGES | Database Coordinator | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.2 Detector Operations & Maintenance | 2.2 Detector Operations & Maintenance | Non-US | Non-US Total | | | | | | | | 0.10 | 0.10 |
| 2.2 Detector Operations & Maintenance | 2.2 Detector Operations & Main | | WBS L3 | | | | | 1.45 | 0.00 | 0.00 | 0.10 | 1.55 |
| 2.2 Detector Operations & Maintenance | 2.2.1 Run Coordination | US | UW | IT | Auer, Ralf | Winterovers coordinator, hiring and training of winterovers | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.2 Detector Operations & Maintenance | 2.2.1 Run Coordination | US | UW | SC | KAUER, MATTHEW | Run Coordinator | NSF M&O Core | 0.40 | | | | 0.40 |
| 2.2 Detector Operations & Maintenance | 2.2.1 Run Coordination | US | UW | WO | UW Winter Overs | Operate Detector (Winter-Overs) | NSF M&O Core | 3.00 | | | | 3.00 |
| 2.2 Detector Operations & Maintenance | 2.2.1 Run Coordination | US | US Total | | | | | 3.60 | 0.00 | 0.00 | 0.00 | 3.60 |
| 2.2 Detector Operations & Maintenance | 2.2.1 Run Coordination | Non-US | Non-US Total | | | | | | | | 0.00 | 0.00 |
| 2.2 Detector Operations & Maintenance | 2.2.1 Run Coordination | | WBS L3 | | | | | 3.60 | 0.00 | 0.00 | 0.00 | 3.60 |
| 2.2 Detector Operations & Maintenance | 2.2.2 Data Acquisition | US | LBNL | EN | STEZELBERGER, THORSTEN | Maintain DAQ Hardware (Hubs, DOR, Clocks, GPS,...) | NSF M&O Core | 0.15 | | | | 0.15 |
| 2.2 Detector Operations & Maintenance | 2.2.2 Data Acquisition | US | PSU | SC | ANDERSON, TYLER | DAQ Firmware Development | NSF M&O Core | 0.23 | | | | 0.23 |
| 2.2 Detector Operations & Maintenance | 2.2.2 Data Acquisition | US | PSU | GR | PANKOVA, DARIA | DAQ electronics hardware and firmware | US In-Kind | | | 0.47 | | 0.47 |
| 2.2 Detector Operations & Maintenance | 2.2.2 Data Acquisition | US | UD | KE | SECKEL, DAVID | DAQ Monitoring | US In-Kind | | | 0.05 | | 0.05 |
| 2.2 Detector Operations & Maintenance | 2.2.2 Data Acquisition | US | UW | EN | MEURES, THOMAS | Data Acquisition HW Maintenance: DOR, DOMHub and DOMCal | NSF M&O Core | 0.10 | | | | 0.10 |
| 2.2 Detector Operations & Maintenance | 2.2.2 Data Acquisition | US | UW | SC | KELLEY, JOHN | DOM software: DOR device driver, DOMHub scripts, DOMCal | NSF M&O Core | 0.15 | | | | 0.15 |

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|-----------------------------|---------------------------|---------------|---------------------|-------------|----------------------|--|-----------------------------|--------------|-----------------|----------------------------|-------------------------------|-------------|
| 2.2 Detector Operations & M | 2.2.2 Data Acquisition | US | UW | SC | KELLEY, JOHN | Track DOM issues, generate detector run configurations | NSF M&O Core | 0.10 | | | | 0.10 |
| 2.2 Detector Operations & M | 2.2.2 Data Acquisition | US | UW | CS | GLOWACKI, DAVID | IceCube DAQ: trigger and event builder | NSF M&O Core | 0.60 | | | | 0.60 |
| 2.2 Detector Operations & M | 2.2.2 Data Acquisition | US | UW | CS | GLOWACKI, DAVID | IceCube DAQ: command-and-control server, testing infrastructure | NSF M&O Core | 0.40 | | | | 0.40 |
| 2.2 Detector Operations & M | 2.2.2 Data Acquisition | US | UW | CS | BENDFELT, TIMOTHY | IceCube DAQ: StringHub and domapp | NSF M&O Core | 0.75 | | | | 0.75 |
| 2.2 Detector Operations & M | 2.2.2 Data Acquisition | US | UW | CS | BENDFELT, TIMOTHY | IceCube DAQ: supernova interface, hitspooling | NSF M&O Core | 0.25 | | | | 0.25 |
| 2.2 Detector Operations & M | 2.2.2 Data Acquisition | US | US Total | | | | | 2.73 | 0.00 | 0.52 | | 3.25 |
| 2.2 Detector Operations & M | 2.2.2 Data Acquisition | Non-US | ULB | GR | PINAT, ELISA | Data Acquisition | Non-US In-kind | | | | 0.50 | 0.50 |
| 2.2 Detector Operations & M | 2.2.2 Data Acquisition | Non-US | Non-US Total | | | | | | | | 0.50 | 0.50 |
| 2.2 Detector Operations & M | 2.2.2 Data Acquisition | WBS L3 | | | | | | 2.73 | 0.00 | 0.52 | 0.50 | 3.75 |
| 2.2 Detector Operations & M | 2.2.3 Online Filter (Pnf) | US | UMD | SC | BLAUFUSS, ERIK | Maintain PnF S/W and Online Filters | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.2 Detector Operations & M | 2.2.3 Online Filter (Pnf) | US | UMD | CS | Schmidt, Torsten | Maintain PnF Software and Online Filters | NSF M&O Core | 0.00 | | | | 0.00 |
| 2.2 Detector Operations & M | 2.2.3 Online Filter (Pnf) | US | UMD | GR | MAUNU, RYAN | Online Filter Testing | Base Grants | | 0.13 | | | 0.13 |
| 2.2 Detector Operations & M | 2.2.3 Online Filter (Pnf) | US | UMD | GR | CHEUNG, ELIM | Online Filter Testing | Base Grants | | 0.13 | | | 0.13 |
| 2.2 Detector Operations & M | 2.2.3 Online Filter (Pnf) | US | US Total | | | | | 0.20 | 0.25 | 0.00 | | 0.45 |
| 2.2 Detector Operations & M | 2.2.3 Online Filter (Pnf) | WBS L3 | | | | | | 0.20 | 0.25 | 0.00 | | 0.45 |
| 2.2 Detector Operations & M | 2.2.4 Sps Operations | US | UW | IT | Auer, Ralf | Maintain South Pole Computing H/W Infrastructure and operating systems | NSF M&O Core | 0.40 | | | | 0.40 |
| 2.2 Detector Operations & M | 2.2.4 Sps Operations | US | UW | EN | SANDSTROM, PERRY | Maintain South Pole System H/W Infrastructure | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.2 Detector Operations & M | 2.2.4 Sps Operations | US | US Total | | | | | 0.60 | 0.00 | 0.00 | | 0.60 |
| 2.2 Detector Operations & M | 2.2.4 Sps Operations | WBS L3 | | | | | | 0.60 | 0.00 | 0.00 | | 0.60 |
| 2.2 Detector Operations & M | 2.2.5 Spts Operations | US | UW | IT | Auer, Ralf | Maintain South Pole Test System computing H/W Infrastructure and operating systems | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.2 Detector Operations & M | 2.2.5 Spts Operations | US | UW | IT | Auer, Ralf | South Pole System networking and security maintenance | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.2 Detector Operations & M | 2.2.5 Spts Operations | US | UW | EN | MEURES, THOMAS | Maintain South Pole Test System H/W Infrastructure | NSF M&O Core | 0.25 | | | | 0.25 |
| 2.2 Detector Operations & M | 2.2.5 Spts Operations | US | US Total | | | | | 0.65 | 0.00 | 0.00 | 0.00 | 0.65 |
| 2.2 Detector Operations & M | 2.2.5 Spts Operations | WBS L3 | | | | | | 0.65 | 0.00 | 0.00 | | 0.65 |
| 2.2 Detector Operations & M | 2.2.6 Experiment Control | US | UW | CS | BRAUN, JAMES | IceCube LiveControl: experiment control software | NSF M&O Core | 0.50 | | | | 0.50 |
| 2.2 Detector Operations & M | 2.2.6 Experiment Control | US | UW | CS | BURRESON, COLIN | IceCube LiveControl: experiment control software | NSF M&O Core | 0.25 | | | | 0.25 |
| 2.2 Detector Operations & M | 2.2.6 Experiment Control | US | US Total | | | | | 0.75 | 0.00 | 0.00 | | 0.75 |
| 2.2 Detector Operations & M | 2.2.6 Experiment Control | WBS L3 | | | | | | 0.75 | 0.00 | 0.00 | | 0.75 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | CAU | KE | JAPARIDZE, GEORGE | Detector monitoring shifts | US In-Kind | | | | 0.02 | 0.02 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | DREXEL | PO | RICHMAN, MIKE | Detector monitoring shifts | US In-Kind | | | | 0.03 | 0.03 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | DREXEL | GR | WILLS, ELIZABETH | Detector monitoring shifts | US In-Kind | | | | 0.03 | 0.03 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | GTECH | GR | CASEY, JAMES | Detector monitoring shifts | Base Grants | | 0.03 | | | 0.03 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | KU | KE | BESSON, DAVE | Detector monitoring shifts | US In-Kind | | | | 0.02 | 0.02 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | SBU | KE | KIRYLUK, JOANNA | BadDoms | US In-Kind | | | | 0.05 | 0.05 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | SBU | GR | YIQIAN XU | Detector Monitoring | Base Grants | | 0.05 | | | 0.05 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | SBU | GR | NIEDERHAUSEN, HANS | Moni 2.0 software development | Base Grants | | 0.15 | | | 0.15 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | LBNL | PO | TATAR, JOULIEN | Detector monitoring shifts | US In-Kind | | | | 0.09 | 0.09 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | MSU | GR | NEER, GARRETT | Detector monitoring shifts | US In-Kind | | | | 0.03 | 0.03 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | MSU | GR | LENNARZ, DIRK | Detector monitoring shifts | US In-Kind | | | | 0.03 | 0.03 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | PSU | PO | ARLEN, TIM | Detector monitoring shifts | Base Grants | | 0.03 | | | 0.03 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | PSU | GR | HUANG, FEIFEI | Detector monitoring shifts | Base Grants | | 0.03 | | | 0.03 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | PSU | GR | LANFRANCHI, JUSTIN | Detector monitoring shifts | US In-Kind | | | | 0.03 | 0.03 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | PSU | GR | PANKOVA, DARIA | Detector monitoring shifts | US In-Kind | | | | 0.03 | 0.03 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | SDSMT | GR | DVORAK, EMILY | Detector monitoring shifts | US In-Kind | | | | 0.05 | 0.05 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | SUBR | KE | TER-ANTONYAN, SAMVEL | Detector Monitoring | US In-Kind | | | | 0.02 | 0.02 |

IceCube M&O Staffing Matrix sort by WBS v19.1 2015.1115.xls

| WBS L2 | WBS L3 | US / Non-US | Institution | Lab or Cat. | Names | Tasks | Source of Funds (U.S. Only) | NSF M&O Core | NSF Base Grants | U.S. Institutional In-Kind | Europe & Asia Pacific In-Kind | Grand Total |
|-----------------------------|----------------------------------|---------------|---------------------|-------------|--------------------|---|-----------------------------|--------------|-----------------|----------------------------|-------------------------------|-------------|
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | UA | GR | PEPPER, JAMES | Detector monitoring shifts | Base Grants | | 0.05 | | | 0.05 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | UAA | KE | RAWLINS, KATHERINE | Detector monitoring shifts | US In-Kind | | | 0.02 | | 0.02 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | UCB | SC | FILIMONOV, KIRILL | Coordinate Monitoring | Base Grants | | 0.25 | | | 0.25 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | UCB | SC | UCB SC | Detector monitoring shifts | Base Grants | | 0.02 | | | 0.02 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | UCI | KE | BARWICK, STEVE | Detector monitoring shifts | US In-Kind | | | 0.01 | | 0.01 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | UCI | GR | HANSON, JORDAN | Detector monitoring shifts | US In-Kind | | | 0.01 | | 0.01 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | UMD | GR | UMD GR | Detector monitoring shifts | Base Grants | | 0.06 | | | 0.06 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | UW | SC | KAUER, MATTHEW | Data Monitoring lead: coordinate test and feature dev.; design underlying analysis algorithms | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | UW | SC | KAUER, MATTHEW | Training and coordinating monitoring shifters | NSF M&O Core | 0.10 | | | | 0.10 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | UW | CS | FRERE, MICHAEL | IceCube Live monitoring system: data quality and monitoring, back-end databases | NSF M&O Core | 0.80 | | | | 0.80 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | UW | CS | FRERE, MICHAEL | IceCube Live: release management, supporting external developers (OFU, SINDAQ, etc.) | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | UW | CS | BURRESON, COLIN | IceCube Live monitoring system: web interface | NSF M&O Core | 0.75 | | | | 0.75 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | UW | PO | UW PO | Detector monitoring shifts | Base Grants | | 0.08 | | | 0.08 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | UW | GR | UW GR | Detector monitoring shifts | Base Grants | | 0.12 | | | 0.12 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | US | US Total | | | | | 2.05 | 0.87 | 0.46 | | 3.38 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | CHIBA | GR | CHIBA GR | Detector Monitoring | Non-US In-kind | | | | 0.03 | 0.03 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | DESY | SC | DESY SC | Detector Monitoring | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | DESY | GR | DESY GR | Detector Monitoring | Non-US In-kind | | | | 0.12 | 0.12 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | DTMND | GR | DTMD GR | Detector Monitoring | Non-US In-kind | | | | 0.03 | 0.03 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | TUM | GR | MPI GR | Detector Monitoring | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | RWTH | GR | RONGEN, MARTIN | Detector monitoring shifts | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | RWTH | GR | RWTH GR | Detector monitoring shifts | Non-US In-kind | | | | 0.12 | 0.12 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | SKKU | GR | IN, SEONGJUN | Detector Monitoring | Non-US In-kind | | | | 0.03 | 0.03 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | SU | GR | SU GR | Detector Monitoring | Non-US In-kind | | | | 0.06 | 0.06 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | UC | KE | ADAMS, JENNI | Detector Monitoring | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | ULB | GR | ULB GR | Detector Monitoring | Non-US In-kind | | | | 0.12 | 0.12 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | UOX | KE | SARKAR, SUBIR | Detector Monitoring | Non-US In-kind | | | | 0.02 | 0.02 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | UU | GR | UNGER, LISA | Tools development | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | UU | GR | BURGMAN, ALEXANDER | Detector monitoring shifts | Non-US In-kind | | | | 0.03 | 0.03 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | VUB | PO | VUB PO | Detector monitoring shifts | Non-US In-kind | | | | 0.06 | 0.06 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | VUB | GR | VUB GR | Detector monitoring shifts | Non-US In-kind | | | | 0.06 | 0.06 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | WUPPERTAL | GR | WUPPERTAL GR | South Pole EMI Monitoring | Non-US In-kind | | | | 0.15 | 0.15 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | WUPPERTAL | GR | WUPPERTAL GR | SPATS | Non-US In-kind | | | | 0.35 | 0.35 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | MAINZ | GR | UM GR | Detector Monitoring | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | GENT | GR | UGENT GR | Detector Monitoring | Non-US In-kind | | | | 0.03 | 0.03 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | DPNC | GR | ASEN, CHRISTOV | Detector Monitoring | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | DPNC | GR | RAAMEZ MOHAMED | Detector Monitoring | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | BOCHUM | GR | KROLL, MIKE | Detector Monitoring | Non-US In-kind | | | | 0.03 | 0.03 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | NBI | GR | LARSON, MICHAEL | Detector monitoring shifts | Non-US In-kind | | | | 0.03 | 0.03 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | NBI | GR | MEDICI, MORTEN | Detector monitoring shifts | Non-US In-kind | | | | 0.03 | 0.03 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | Non-US | Non-US Total | | | | | | | | 1.85 | 1.85 |
| 2.2 Detector Operations & M | 2.2.7 Detector Monitoring | WBS L3 | | | | | | 2.05 | 0.87 | 0.46 | 1.85 | 5.23 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | US | GTECH | GR | CASEY, JAMES | Cable shadowing | Base Grants | | 0.20 | | | 0.20 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | US | UA | KE | WILLIAMS, DAWN | Managing flasher runs coordinating low level calibration effort | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | US | UA | PO | PALCZEWSKI, TOMASZ | SPE recalibration | Base Grants | | 0.10 | | | 0.10 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | US | UA | PO | PALCZEWSKI, TOMASZ | Domcal monthly vetting | Base Grants | | 0.05 | | | 0.05 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | US | UA | GR | PEPPER, JAMES | IceCube Live C&V | Base Grants | | 0.05 | | | 0.05 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | US | MIT | GR | COLLIN, GABRIEL | Flasher code development | US In-Kind | | | 0.10 | | 0.10 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | US | UW | SC | CHIRKIN, DMITRY | Direct photon tracking / iceproperties calibration; FE/pulse extractor; reco S/W | Base Grants | | 0.30 | | | 0.30 |

IceCube M&O Staffing Matrix sort by WBS v19.1 2015.1115.xls

| WBS L2 | WBS L3 | US / Non-US | Institution | Lab or Cat. | Names | Tasks | Source of Funds (U.S. Only) | NSF M&O Core | NSF Base Grants | U.S. Institutional In-Kind | Europe & Asia Pacific In-Kind | Grand Total |
|--|-------------------------------------|---------------|---------------------|-------------|--------------------------------|--|-----------------------------|--------------|-----------------|----------------------------|-------------------------------|--------------|
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | US | UW | SC | WENDT, CHRISTOPHER | Flasher output, flasher calibration | NSF M&O Core | 0.40 | | | | 0.40 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | US | UW | SC | WENDT, CHRISTOPHER | DOM charge response, linearity, DOM calibration support | NSF M&O Core | 0.40 | | | | 0.40 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | US | UW | SC | TOSI, DELIA | Absolute DOM sensitivity calibration (laboratory measurements) | NSF M&O Core | 0.30 | | | | 0.30 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | US | UW | DS | FADIRAN, OLADIPO's Replacement | Detector geometry, calibration, and status database maintenance and support | NSF M&O Core | 0.10 | | | | 0.10 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | US | UW | GR | MANCINA, SARAH | muon neutrinos, DOM sensitivity | US In-Kind | | | 0.20 | | 0.20 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | US | US Total | | | | | 1.40 | 0.70 | 0.30 | | 2.40 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | Non-US | RWTH | PO | AUFFENBERG, JAN | Surface detectors calibration | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | Non-US | RWTH | PO | AUFFENBERG, JAN | IceAct | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | Non-US | RWTH | GR | LEIF, RADEL | IceAct commissioning | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | Non-US | RWTH | GR | RONGEN, MARTIN | Hole Ice calibration | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | Non-US | RWTH | GR | RONGEN, MARTIN | Gen2 DOM Calibration and R&D | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | Non-US | RWTH | GR | SCHOENEN, SEBASTIAN | IceAct commissioning | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | Non-US | Non-US Total | | | | | | | | 1.00 | 1.00 |
| 2.2 Detector Operations & M | 2.2.8 Detector Calibration | WBS L3 | | | | | | 1.40 | 0.70 | 0.30 | 1.00 | 3.40 |
| 2.2 Detector Operations & M | 2.2.9 Icetop Operations | US | UD | SC | TILAV, SERAP | Coordinate IceTop Operations | NSF M&O Core | 1.00 | | | | 1.00 |
| 2.2 Detector Operations & M | 2.2.9 Icetop Operations | US | UW | EN | SANDSTROM, PERRY | Design, build and test experimental apparatus for restoring IceTop detector efficiency | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.2 Detector Operations & M | 2.2.9 Icetop Operations | US | UW | SC | TOSI, DELIA | Test and commission experimental apparatus for restoring IceTop detector efficiency | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.2 Detector Operations & M | 2.2.9 Icetop Operations | US | UW | SC | KAUER, MATTHEW | Design and build experimental apparatus for restoring IceTop detector efficiency | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.2 Detector Operations & M | 2.2.9 Icetop Operations | US | US Total | | | | | 1.60 | 0.00 | 0.00 | | 1.60 |
| 2.2 Detector Operations & M | 2.2.9 Icetop Operations | WBS L3 | | | | | | 1.60 | 0.00 | 0.00 | 0.00 | 1.60 |
| 2.2 Detector Operations & M | 2.2.10 Supernova Operations | US | Yale | KE | MARUYAMA, REINA | Supernova DAQ | US In-Kind | | | 0.05 | | 0.05 |
| 2.2 Detector Operations & M | 2.2.10 Supernova Operations | US | US Total | | | | | 0.00 | 0.00 | 0.05 | 0.00 | 0.05 |
| 2.2 Detector Operations & M | 2.2.10 Supernova Operations | Non-US | MAINZ | GR | EBERHARD, BENJAMIN | SuperNova Operations | Non-US In-kind | | | | 0.30 | 0.30 |
| 2.2 Detector Operations & M | 2.2.10 Supernova Operations | Non-US | MAINZ | GR | BAUM, VOLKER | SuperNova Operations | Non-US In-kind | | | | 0.15 | 0.15 |
| 2.2 Detector Operations & M | 2.2.10 Supernova Operations | Non-US | MAINZ | GR | KRUECKL, GERALD | SuperNova Operations | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.2 Detector Operations & M | 2.2.10 Supernova Operations | Non-US | Non-US Total | | | | | | | | 0.65 | 0.65 |
| 2.2 Detector Operations & M | 2.2.10 Supernova Operations | WBS L3 | | | | | | 0.00 | 0.00 | 0.05 | 0.65 | 0.70 |
| 2.2 Detector Operations & M | WBS L2 Total | | | | | | | 15.03 | 1.82 | 1.33 | 4.10 | 22.28 |
| 2.1 Program Management | 2.1.1 Administration | US | UW | MA | MERINO, GONZALO | Computing Infrastructure Manager | NSF M&O Core | 0.90 | | | | 0.90 |
| 2.3 Computing And Data Ma | 2.3.0 Computing And Data Management | US | LBL | KE | KLEIN,SPENCER | Oversee raw data storage at LBNL | US In-Kind | | | 0.08 | | 0.08 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | US | US Total | | | | | 0.90 | 0.00 | 0.08 | | 0.98 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | US | UA | PO | PALCZEWSKI, TOMASZ | Software strike team, lead on domcal-related software | Base Grants | | 0.25 | | | 0.25 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | US | DREXEL | PO | RICHMAN, MIKE | Software strike team member | US In-Kind | | | 0.30 | | 0.30 |

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| WBS L2 | WBS L3 | US / Non-US | Institution | Lab or Cat. | Names | Tasks | Source of Funds (U.S. Only) | NSF M&O Core | NSF Base Grants | U.S. Institutional In-Kind | Europe & Asia Pacific In-Kind | Grand Total |
|---------------------------|-------------------------------|---------------|---------------------|-------------|--------------------------------|--|-----------------------------|--------------|-----------------|----------------------------|-------------------------------|-------------|
| 2.3 Computing And Data Ma | 2.3.1 Core Software | US | LBLN | PO | TATAR, JOULIEN | Computing Strike Team | Base Grants | | 0.25 | | | 0.25 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | US | UMD | GR | HELLAUER, ROBERT | Core Software | Base Grants | | 0.13 | | | 0.13 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | US | UMD | CS | Schmidt, Torsten | Maintain Core Analysis Framework (IceTray) | NSF M&O Core | 0.50 | | | | 0.50 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | US | UMD | CS | Ladieu, Don | Maintain Core Analysis Framework (IceTray) | NSF M&O Core | 0.75 | | | | 0.75 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | US | UMD | SC | OLIVAS, ALEX | SW Coordinator – Core Software | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | US | UMD | SC | OLIVAS, ALEX | Support Core Software | US In-Kind | | | 0.10 | | 0.10 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | US | UMD | CS | UMD CS | Maintain Core Software Repository | NSF M&O Core | 0.00 | | | | 0.00 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | US | UW | DS | DIAZ-VELEZ, JUAN CARLOS | Data processing software framework (IceProd) | NSF M&O Core | 0.25 | | | | 0.25 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | US | UW | DS | SCHULTZ, DAVID | Core Software maintenance | NSF M&O Core | 0.50 | | | | 0.50 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | US | UW | CS | BRAUN, JAMES | Analysis Software support | NSF M&O Core | 0.50 | | | | 0.50 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | US | UW | DS | FADIRAN, OLADIPO's Replacement | Maintain Data Processing Software | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | US | US Total | | | | | 2.90 | 0.63 | 0.40 | | 3.93 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | Non-US | ULB | PO | Meagher, Kevin | Software strike team | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | Non-US | VUB | GR | GIULIANO, MAGGI | Software strike team | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | Non-US | Non-US Total | | | | | | | | 0.50 | 0.50 |
| 2.3 Computing And Data Ma | 2.3.1 Core Software | WBS L3 | | | | | | 2.90 | 0.63 | 0.40 | 0.50 | 4.43 |
| 2.3 Computing And Data Ma | 2.3.2 Data Storage & Transfer | US | LBLN | PO | TATAR, JOULIEN | Maintain code and keep transfer running | Base Grants | | 0.10 | | | 0.10 |
| 2.3 Computing And Data Ma | 2.3.2 Data Storage & Transfer | US | UW | IT | BARNET, STEVE | Maintain Core Computing Infrastructure Systems | NSF M&O Core | 0.30 | | | | 0.30 |
| 2.3 Computing And Data Ma | 2.3.2 Data Storage & Transfer | US | UW | IT | BARNET, STEVE | Maintain and Operate Data Storage Infrastructure | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.3 Computing And Data Ma | 2.3.2 Data Storage & Transfer | US | UW | IT | RICHARDS, JOHN's Replacement | Maintain and Operate Data Storage Infrastructure | NSF M&O Core | 0.75 | | | | 0.75 |
| 2.3 Computing And Data Ma | 2.3.2 Data Storage & Transfer | US | UW | IT | RICHARDS, JOHN's Replacement | Maintain Core Computing Infrastructure Systems | NSF M&O Core | 0.25 | | | | 0.25 |
| 2.3 Computing And Data Ma | 2.3.2 Data Storage & Transfer | US | UW | IT | BELLINGER, JIM | Maintain and Operate Data Storage Infrastructure | NSF M&O Core | 0.30 | | | | 0.30 |
| 2.3 Computing And Data Ma | 2.3.2 Data Storage & Transfer | US | UW | IT | BELLINGER, JIM | Long term preservation and archive services. Data curation. | NSF M&O Core | 0.50 | | | | 0.50 |
| 2.3 Computing And Data Ma | 2.3.2 Data Storage & Transfer | US | UW | IT | BELLINGER, JIM | IceCube Open Data services and tools. | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.3 Computing And Data Ma | 2.3.2 Data Storage & Transfer | US | UW | IT | WISNIEWSKI, PAUL | Maintain Data Center Networking and Cyber Security | NSF M&O Core | 0.70 | | | | 0.70 |
| 2.3 Computing And Data Ma | 2.3.2 Data Storage & Transfer | US | UW | PO | WANDKOWSKY, NANCY | Analysis disk Data storage review, data filters | Base Grants | | 0.10 | | | 0.10 |
| 2.3 Computing And Data Ma | 2.3.2 Data Storage & Transfer | US | UW | CS | MEADE, PATRICK | Operate Data transfer from S. Pole to UW Data Warehouse and Archive services at S. Pole. | NSF M&O Core | 0.40 | | | | 0.40 |
| 2.3 Computing And Data Ma | 2.3.2 Data Storage & Transfer | US | US Total | | | | | 2.35 | 0.10 | 0.00 | | 2.45 |
| 2.3 Computing And Data Ma | 2.3.2 Data Storage & Transfer | Non-US | DESY | GR | STOESSL, ACHIM | Data Storage & Transfer | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.3 Computing And Data Ma | 2.3.2 Data Storage & Transfer | Non-US | Non-US Total | | | | | | | | 0.10 | 0.10 |
| 2.3 Computing And Data Ma | 2.3.2 Data Storage & Transfer | WBS L3 | | | | | | 2.35 | 0.10 | 0.00 | 0.10 | 2.55 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | US | PSU | PO | ARLEN, TIM | Coordination and Support Grid distributed computing | NSF M&O Core | 0.25 | | | | 0.25 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | US | MSU | PO | HIGNIGHT, JOSHUA | Simulation production site manager at MSU | NSF M&O Core | 0.25 | | | | 0.25 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | US | SUBR | KE | TER-ANTONYAN, SAMVEL | LONI Grid computing | US In-Kind | | | 0.30 | | 0.30 |

IceCube M&O Staffing Matrix sort by WBS v19.1 2015.1115.xls

| WBS L2 | WBS L3 | US / Non-US | Institution | Lab or Cat. | Names | Tasks | Source of Funds (U.S. Only) | NSF M&O Core | NSF Base Grants | U.S. Institutional In-Kind | Europe & Asia Pacific In-Kind | Grand Total |
|---------------------------|----------------------------------|---------------|---------------------|-------------|--------------------------------|---|-----------------------------|--------------|-----------------|----------------------------|-------------------------------|-------------|
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | US | UMD | IT | UMD IT | Coordination and Support for Grid and distributed computing | NSF M&O Core | 0.00 | | | | 0.00 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | US | UW | IT | STOCK, BENJAMIN | Maintain Data Center monitoring infrastructure | NSF M&O Core | 0.40 | | | | 0.40 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | US | UW | IT | STOCK, BENJAMIN | Maintain and operate Virtual Machines deployment infrastrucutre. | NSF M&O Core | 0.40 | | | | 0.40 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | US | UW | IT | STOCK, BENJAMIN | Maintain Core Computing Infrastructure Systems | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | US | UW | IT | BARNET, STEVE | Maintain High Performance Computing services. | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | US | UW | IT | BARNET, STEVE | Networking and security maintenance | NSF M&O Core | 0.10 | | | | 0.10 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | US | UW | IT | BARNET, STEVE | Coordination with Operations and Cybersecurity manager | NSF M&O Core | 0.10 | | | | 0.10 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | US | UW | IT | BRIK, VLADIMIR | Maintain High Performance Computing services | NSF M&O Core | 0.50 | | | | 0.50 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | US | UW | IT | WISNIEWSKI, PAUL | Data Center Facilities manager (power and cooling) | NSF M&O Core | 0.10 | | | | 0.10 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | US | UW | IT | WISNIEWSKI, PAUL | Maintain Data Center Infrastructure | NSF M&O Core | 0.15 | | | | 0.15 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | US | UW | IT | BRIK, VLADIMIR | Maintain Core Computing Infrastructure Systems | NSF M&O Core | 0.50 | | | | 0.50 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | US | UW | IT | SEBRANEK, CHAD | IceCube Web Development | NSF M&O Core | 0.25 | | | | 0.25 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | US | US Total | | | | | 3.40 | 0.00 | 0.30 | | 3.70 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | Non-US | DESY | IT | DESY IT | European Data Center -Distributed Computing and Labor | Non-US In-kind | | | | 1.00 | 1.00 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | Non-US | DESY | KE | ACKERMANN, MARKUS | DESY TIER-1 coordination | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | Non-US | DTMND | SC | PIELOTH, DAMIAN | Coordinate GRID computing in Germany | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | Non-US | UU | PO | EULER, SEBASTIAN | Computing Resources | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | Non-US | UMH | GR | KOHNEN, GEORGES | IC database management | Non-US In-kind | | | | 0.30 | 0.30 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | Non-US | Non-US Total | | | | | | | | 1.95 | 1.95 |
| 2.3 Computing And Data Ma | 2.3.3 Computing Resources | WBS L3 | | | | | | 3.40 | 0.00 | 0.30 | 1.95 | 5.65 |
| 2.3 Computing And Data Ma | 2.3.4 Data Production Processing | US | DREXEL | GR | WILLS, ELIZABETH | HESE Online system | US In-Kind | | | 0.25 | | 0.25 |
| 2.3 Computing And Data Ma | 2.3.4 Data Production Processing | US | UMD | PO | FELDE, JOHN | Implement near real time GRB analysis | Base Grants | | 0.30 | | | 0.30 |
| 2.3 Computing And Data Ma | 2.3.4 Data Production Processing | US | UW | CS | MEADE, PATRICK | Maintain Data handling software (JADE): Archive at the S. Pole, transfer and ingest to the UW Data Warehouse. | NSF M&O Core | 0.50 | | | | 0.50 |
| 2.3 Computing And Data Ma | 2.3.4 Data Production Processing | US | UW | CS | MEADE, PATRICK | Maintain Data Warehouse Standards, Web Interface to the Data Warehouse and Data Access services (ftp/http). | NSF M&O Core | 0.10 | | | | 0.10 |
| 2.3 Computing And Data Ma | 2.3.4 Data Production Processing | US | UW | DS | FADIRAN, OLADIPO's Replacement | Transformation of Data for Long-Term Persistence and Archival. Run Common Reconstructions (Level2) | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.3 Computing And Data Ma | 2.3.4 Data Production Processing | US | US Total | | | | | 0.80 | 0.30 | 0.25 | | 1.35 |
| 2.3 Computing And Data Ma | 2.3.4 Data Production Processing | Non-US | Non-US Total | | | | | | | | 0.00 | 0.00 |
| 2.3 Computing And Data Ma | 2.3.4 Data Production Processing | WBS L3 | | | | | | 0.80 | 0.30 | 0.25 | 0.00 | 1.35 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | US | LBNL | PO | TATAR, JOULIEN | Simulation production site manager | Base Grants | | 0.10 | | | 0.10 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | US | MSU | PO | HIGNIGHT, JOSHUA | Simulation Production | US In-Kind | | | 0.08 | | 0.08 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | US | MSU | PO | JOAO PEDRO DE ANDRÉ | Simulation Production, IceSim vetting for LowEn | US In-Kind | | | 0.08 | | 0.08 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | US | PSU | PO | ARLEN, TIM | Simulation Production | Base Grants | | 0.08 | | | 0.08 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | US | OSU | PO | SUTHERLAND, MICHAEL | Simulation Production | US In-Kind | | | 0.10 | | 0.10 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | US | UMD | GR | MAUNU, RYAN | Simulation production site manager | Base Grants | | 0.20 | | | 0.20 |

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| WBS L2 | WBS L3 | US / Non-US | Institution | Lab or Cat. | Names | Tasks | Source of Funds (U.S. Only) | NSF M&O Core | NSF Base Grants | U.S. Institutional In-Kind | Europe & Asia Pacific In-Kind | Grand Total |
|---------------------------|-----------------------------|-------------|-----------------|-------------|--------------------------------|--|-----------------------------|--------------|-----------------|----------------------------|-------------------------------|-------------|
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | US | UW | SC | DESIATI, PAOLO | Coordination of Simulation Production, identifying resources, streamlining programs for the cloud, GPU | NSF M&O Core | 0.40 | | | | 0.40 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | US | UW | SC | DESIATI, PAOLO | Simulation Production Manager | NSF M&O Core | 0.20 | | | | 0.20 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | US | UW | SC | DESIATI, PAOLO | Simulation Production panel chair | US In-Kind | | | 0.20 | | 0.20 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | US | UW | PO | DAY, MELANIE | Low energy simulation production | Base Grants | | 0.30 | | | 0.30 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | US | UW | DS | DIAZ-VELEZ, JUAN CARLOS | Maintain Simulation Production Software, maintain, test and update physics aspects of the atmospheric muon and neutrino simulation | NSF M&O Core | 0.40 | | | | 0.40 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | US | UW | DS | FADIRAN, OLADIPO's Replacement | Simulation Production Coordination; production configurations, test production and web portal. | NSF M&O Core | 0.50 | | | | 0.50 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | US | UW | DS | SCHULTZ, DAVID | Simulation Production | NSF M&O Core | 0.50 | | | | 0.50 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | US | UW | DS | DELVENTHAL, DAVID | Simulation Production software development | NSF M&O Core | 1.00 | | | | 1.00 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | US | US Total | | | | | 3.00 | 0.68 | 0.46 | | 4.14 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | DESY | GR | DESY GR | Simulation Production Cluster | Non-US In-kind | | | | 0.15 | 0.15 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | DESY | SC | Santen, Jakob | Simulation production site manager in DESY | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | DTMND | GR | BÖRNER, MATHIS | Simulation production site manager at Dortmund | Non-US In-kind | | | | 0.30 | 0.30 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | MAINZ | GR | EHRHARD, THOMAS | SimProd maintenance | Non-US In-kind | | | | 0.30 | 0.30 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | RWTH | GR | REIMAN, RENE | AC-RZ GPU/CPU cluster maint. iceprod and mass production | Non-US In-kind | | | | 0.30 | 0.30 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | RWTH | GR | HAACK, CHRISTIAN | Simulation Tools (ng) | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | RWTH | GR | HAACK, CHRISTIAN | Simulation production (ng) | Non-US In-kind | | | | 0.30 | 0.30 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | RWTH | GR | HAACK, CHRISTIAN | Simulation Production on cluster/GRID | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | RWTH | GR | SCHOENEN, SEBASTIAN | Benchmark diffuse analysis | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | RWTH | GR | VEHRING, MARKUS | Low energy Simulation Production | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | ULB | KE | AGUILAR SANCHEZ JUAN ANTONIO | Simulation coordination board member | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | ULB | CS | AMARY, SAMIR | Simulation Production Site Manager at ULB | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | ALBERTA | KE | KOPPER, CLAUDIO | Simulation coordination board member | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | ALBERTA | KE | KOPPER, CLAUDIO | GPU computing resources | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | ALBERTA | PO | RIEDEL, BENEDIKT | Simulation production site manager at Compute Canada Resource Allocation | Non-US In-kind | | | | 0.40 | 0.40 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | ALBERTA | PO | WEAVER, CHRIS | High energy event generator (leptoninjector), PMT simulation, atmospheric flux library | Non-US In-kind | | | | 0.40 | 0.40 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | ALBERTA | GR | NOWICKI, SARAH | Clsim photon table production | Non-US In-kind | | | | 0.35 | 0.35 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | WUPPERTAL | GR | WUPPERTAL GR | Simulation Production | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | CHIBA | KE | KEIICHI MASE | Generating background event simulation by Corsika | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | NBI | KE | KOSKINEN, JASON | Low-energy/PINGU Simulation | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | NBI | GR | LARSON, MICHAEL | IC86 MuonGun | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | Toronto | KE | CLARK, KENNETH | SciNet computing | Non-US In-kind | | | | 0.25 | 0.25 |

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| WBS L2 | WBS L3 | US / Non-US | Institution | Lab or Cat. | Names | Tasks | Source of Funds (U.S. Only) | NSF M&O Core | NSF Base Grants | U.S. Institutional In-Kind | Europe & Asia Pacific In-Kind | Grand Total |
|---------------------------------|------------------------------------|---------------|---------------------|-------------|----------------------|--|-----------------------------|--------------|-----------------|----------------------------|-------------------------------|--------------|
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | Toronto | KE | CLARK, KENNETH | GENIE maintenance | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | UMH | GR | KOHENEN, GEORGES | Simulation Production | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | Non-US | Non-US Total | | | | | | | | 4.70 | 4.70 |
| 2.3 Computing And Data Ma | 2.3.5 Simulation Production | WBS L3 | | | | | | 3.00 | 0.68 | 0.46 | 4.70 | 8.84 |
| 2.3 Computing And Data M | WBS L2 Total | | | | | | | 12.45 | 1.71 | 1.41 | 7.25 | 22.82 |
| 2.4 Triggering And Filtering | 2.4.1 TFT Coordination | US | UA | KE | WILLIAMS, DAWN | TFT Board member | US In-Kind | | | 0.10 | | 0.10 |
| 2.4 Triggering And Filtering | 2.4.1 TFT Coordination | US | UD | KE | SECKEL, DAVID | TFT Board member | US In-Kind | | | 0.10 | | 0.10 |
| 2.4 Triggering And Filtering | 2.4.1 TFT Coordination | US | UW | SC | KAUER, MATTHEW | TFT Board member | US In-Kind | | | 0.10 | | 0.10 |
| 2.4 Triggering And Filtering | 2.4.1 TFT Coordination | US | UMD | SC | BLAUFUSS, ERIK | Filter requests, bandwidth, TFT Board Member | NSF M&O Core | 0.30 | | | | 0.30 |
| 2.4 Triggering And Filtering | 2.4.1 TFT Coordination | US | PSU | GR | HUANG, FEIFEI | Study PINGU/HEX hardware requirements using IceCube data & simulation | US In-Kind | | | 0.47 | | 0.47 |
| 2.4 Triggering And Filtering | 2.4.1 TFT Coordination | US | UMD | GR | HELLAUER, ROBERT | Prepare datasets for filter testing and common MC datasets for testing | Base Grants | | 0.10 | | | 0.10 |
| 2.4 Triggering And Filtering | 2.4.1 TFT Coordination | US | US Total | | | | | 0.30 | 0.10 | 0.77 | | 1.17 |
| 2.4 Triggering And Filtering | 2.4.1 TFT Coordination | Non-US | ALBERTA | KE | GRANT, DARREN | TFT Board member | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.4 Triggering And Filtering | 2.4.1 TFT Coordination | Non-US | ALBERTA | KE | KOPPER, CLAUDIO | L2 manager | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.4 Triggering And Filtering | 2.4.1 TFT Coordination | Non-US | DESY | KE | KARG, TIMO | TFT Board member | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.4 Triggering And Filtering | 2.4.1 TFT Coordination | Non-US | UU | KE | HALLGREN, ALLAN | TFT Board Chair | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.4 Triggering And Filtering | 2.4.1 TFT Coordination | Non-US | UU | KE | DE LOS HEROS, CARLOS | TFT Board member | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.4 Triggering And Filtering | 2.4.1 TFT Coordination | Non-US | Non-US Total | | | | | | | | 0.65 | 0.65 |
| 2.4 Triggering And Filtering | 2.4.1 TFT Coordination | WBS L3 | | | | | | 0.30 | 0.10 | 0.77 | 0.65 | 1.82 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | US | UA | KE | WILLIAMS, DAWN | Tau WG Chair | US In-Kind | | | 0.25 | | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | US | UAA | KE | RAWLINS, KATHERINE | Cosmic Ray WG co-convener | US In-Kind | | | 0.20 | | 0.20 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | US | UD | PO | GONZALEZ, JAVIER | Physics filters | Base Grants | | 0.10 | | | 0.10 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | US | DREXEL | KE | NEILSON, NAOKO | Point Source WG Lead | US In-Kind | | | 0.25 | | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | US | DREXEL | KE | NEILSON, NAOKO | Splitting – Q/P frame and coincidence | US In-Kind | | | 0.05 | | 0.05 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | US | SBU | KE | KIRYLUK, JOANNA | Cascade WG Co-Chair | US In-Kind | | | 0.25 | | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | US | UCB | SC | WOSCHNAGG, KURT | Low-energy / Oscillation WG Co-Chair | Base Grants | | 0.25 | | | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | US | GTECH | KE | TABOADA, IGNACIO | GRB WG Chair | Base Grants | | 0.25 | | | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | US | UMD | PO | FELDE, JOHN | GRB filters | Base Grants | | 0.20 | | | 0.20 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | US | SBU | GR | NIEDERHAUSEN, HANS | Low Energy | Base Grants | | 0.10 | | | 0.10 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | US | SBU | GR | YIQIAN XU | Cascade filters | Base Grants | | 0.15 | | | 0.15 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | US | UW | GR | FAHEY, SAM | Trigger simulations | Base Grants | | 0.20 | | | 0.20 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | US | UWRF | KE | SEUNARINE, SURUJ | Calibration-Flasher Studies | US In-Kind | | | 0.20 | | 0.20 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | US | US Total | | | | | 0.00 | 1.25 | 1.20 | 0.00 | 2.45 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | BOCHUM | GR | BOS, FABIAN | Moon filter | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | ALBERTA | KE | KOPPER, CLAUDIO | Co-convener Diffuse WG | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | CHIBA | SC | ISHIHARA, AYA | Diffuse WG co-chair | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | CHIBA | SC | ISHIHARA, AYA | EHE Filters | Non-US In-kind | | | | 0.15 | 0.15 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | DESY | KE | KARG, TIMO | CR WG co-chair | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | HUMBOLDT | GR | VOGE, MARKUS | Online L2 Filter, single event stream | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | MAINZ | GR | SANDROOS, JOAKIM | Low-Energy filter /HiveSplitter | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | MAINZ | GR | STEUER, ANNA | HESE filter / Hitspooling | Non-US In-kind | | | | 0.30 | 0.30 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | UC | GR | MUNAWARA, KIRAN | Cascade filters | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | UC | GR | BAGHERPOUR, HADIS | Cascade filters | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | SKKU | KE | ROTT, CARSTEN | BSM WG Co-Chair | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | SKKU | GR | IN, SEONGJUN | Online filter development & testing | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | SU | KE | FINLEY, CHAD | Point Source WG Chair | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | SU | KE | HULTQVIST, KLAS | Diffuse WG Co-chair | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | SU | PO | DUMM, JONATHAN | Online filter | Non-US In-kind | | | | 0.15 | 0.15 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | SU | PO | DUMM, JONATHAN | WG Lead - Muon channel | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | SU | GR | ZOLL, MARCEL | Filters and Simulations | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | SU | GR | AHRENS, MARYON | PhD-related work | Non-US In-kind | | | | 0.10 | 0.10 |

IceCube M&O Staffing Matrix sort by WBS v19.1 2015.1115.xls

| WBS L2 | WBS L3 | US / Non-US | Institution | Lab or Cat. | Names | Tasks | Source of Funds (U.S. Only) | NSF M&O Core | NSF Base Grants | U.S. Institutional In-Kind | Europe & Asia Pacific In-Kind | Grand Total |
|----------------------------------|---------------------------|---------------------|-------------|-------------|------------------------------|--|-----------------------------|--------------|-----------------|----------------------------|-------------------------------|-------------|
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | UU | KE | DE LOS HEROS, CARLOS | WIMP WG Chair | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | VUB | GR | KUNNEN, JAN | Filter for low energy muons | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | VUB | GR | DeWasseige, Gwenhael | Optimization of hitspooling for SN and solar flares | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | DTMND | SC | RUHE, TIM | Physics filters | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | DTMND | GR | MENNE, THORBEN | Physics filters | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | WUPPERTAL | GR | WUPPERTAL GR | New SUSY Filter | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | RWTH | GR | LEIF, RADEL | L3 IC86-x muon data stream, Skripts & Monitoring | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | ULB | KE | AGUILAR SANCHEZ JUAN ANTONIO | Muon working group co-Chair | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | ULB | GR | Ansseau, Isabelle | Vertical event filter | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | DPNC | GR | ASEN, CHRISTOV | Online/Muon Filter | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | DPNC | GR | RAAMEZ MOHAMED | Responsible WIMPs/Low Up Filter | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US | NBI | KE | KOSKINEN, JASON | Low-energy / Oscillation WG Co-Chair | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | Non-US Non-US Total | | | | | | | | | 6.45 | 6.45 |
| 2.4 Triggering And Filtering | 2.4.2 Physics Filters | WBS L3 | | | | | | 0.00 | 1.25 | 1.20 | 6.45 | 8.90 |
| 2.4 Triggering And Filtering | WBS L2 Total | | | | | | | 0.30 | 1.35 | 1.97 | 7.10 | 10.72 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | MIT | GR | COLLIN, GABRIEL | NuSQUiDs model update | US In-Kind | | | | 0.50 | 0.50 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | MIT | GR | AXANI, SPENCER | Earth & Atmos simulations for systematic error studies | US In-Kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | MIT | PO | ARGUELLES, CARLOS | NuSQUiDs, NuSFGen, and MC reweighting development | US In-Kind | | | | 0.30 | 0.30 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | MSU | KE | MAHN, KENDALL | Integration of GENIE for low energy systematics | US In-Kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | MSU | PO | HIGNIGHT, JOSHUA | Integration of GENIE for low energy systematics | US In-Kind | | | | 0.20 | 0.20 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | SDSMT | KE | XINHUA, BAI | Muon yield in PeV-EeV showers & systematics | US In-Kind | | | | 0.15 | 0.15 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | SDSMT | GR | DVORAK, EMILY | Atmospheric muon & neutrino simulation for cosmic ray & neutrino studies | US In-Kind | | | | 0.40 | 0.40 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | SUBR | KE | FAZELY, ALI | GEANT Simulation | US In-Kind | | | | 0.15 | 0.15 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | SUBR | SC | XIANWU, XU | Simulation Programs | US In-Kind | | | | 0.15 | 0.15 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | OSU | PO | STAMATIKOS, MICHAEL | GRB Analysis Tools | US In-Kind | | | | 0.05 | 0.05 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | UA | GR | PEPPER, JAMES | Dark Matter signal simulation | Base Grants | | 0.15 | | | 0.15 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | UCB | SC | WOSCHNAGG, KURT | Maintain and Verify Simulation of Photon Propagation and update Ice Properties | NSF M&O Core | 0.375 | | | | 0.38 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | UD | PO | GONZALEZ, JAVIER | Simulation Production Site Manager for UD | Base Grants | | 0.20 | | | 0.20 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | UD | GR | PANDYA, HERSHAL | sim-services | Base Grants | | 0.10 | | | 0.10 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | UD | GR | KOIRALA, RAMESH | IT parameters for new moni system | Base Grants | | 0.10 | | | 0.10 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | UW | SC | CHIRKIN, DMITRY | Maintain and Verify Simulation of Photon Propagation and update Ice Properties | NSF M&O Core | 0.40 | | | | 0.40 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | UW | SC | HOSHINA, KOTOYO | nugen maintenance | NSF M&O Core | 0.25 | | | | 0.25 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | UW | GR | JERO, KYLE | Veto simulation | Base Grants | | 0.20 | | | 0.20 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | UW | DS | DIAZ-VELEZ, JUAN CARLOS | Simulation programs (detector response) | NSF M&O Core | 0.25 | | | | 0.25 |

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|----------------------------------|--------------------------------------|---------------|---------------------|-------------|-----------------------|--|-----------------------------|--------------|-----------------|----------------------------|-------------------------------|-------------|
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | US | US Total | | | | | 1.28 | 0.75 | 2.10 | | 4.13 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | Non-US | DTMND | GR | FUCHS, THOMAS | PROPOSAL-IceProd integration and maintenance/support | Non-US In-kind | | | | 0.50 | 0.50 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | Non-US | DPNC | PO | HELLER, MATTHIEU | Update of NeutrinoFlux | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | Non-US | SU | GR | FLIS, SAMUEL | DOM simulation | Non-US In-kind | | | | 0.15 | 0.15 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | Non-US | GENT | GR | UGENT GR | Support IceTop Simulations, IceTop Calibrations, IceTop Reconstruction | Non-US In-kind | | | | 0.40 | 0.40 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | Non-US | BOCHUM | KE | TJUS, JULIA | Development PROPOSAL simulation software | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | Non-US | BOCHUM | GR | SCHÖNEBERG, SEBASTIAN | Developing / maintaining ANFlux | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | Non-US | NBI | GR | LARSON, MICHAEL | Correlated noise and long-frame CORSIKA | Non-US In-kind | | | | 0.15 | 0.15 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | Non-US | NBI | GR | LARSON, MICHAEL | PINGU CORSIKA | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | Non-US | NBI | GR | MEDICI, MORTEN | DOM noise and quantum efficiency | Non-US In-kind | | | | 0.15 | 0.15 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | Non-US | ERLANGEN | GR | CLASSEN, LEW | multi-PMT DOM development and simulations | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | Non-US | ERLANGEN | GR | TSELENGEDOU, MARIA | Simulation verification | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | Non-US | ERLANGEN | GR | KITTLER, THOMAS | Simulation verification, reconstruction development | Non-US In-kind | | | | 0.40 | 0.40 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | Non-US | HUMBOLDT | KE | KOWALSKI, MAREK | Simulation tools | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | Non-US | RWTH | GR | HAACK, CHRISTIAN | Maintenance / Addition of seasons weights to nuflux module | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | Non-US | RWTH | GR | SCHOENEN, SEBASTIAN | KDE Tools KDE and multi-llh | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | Non-US | Non-US Total | | | | | | | | 2.75 | 2.75 |
| 2.5 Data Quality, Reconstruction | 2.5.1 Simulation Programs | WBS L3 | | | | | | 1.28 | 0.75 | 2.10 | 2.75 | 6.88 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | US | LBNL | GR | MIARECKI, SANDRA | Algorithm for measuring muon energy | Base Grants | | 0.10 | | | 0.10 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | US | LBNL | GR | BINDER, GARY | PMT saturation corrections for analysis | Base Grants | | 0.05 | | | 0.05 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | US | MSU | PO | JOAO PEDRO DE ANDRÉ | Low energy reconstruction techniques for DeepCore | US In-Kind | | | 0.15 | | 0.15 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | US | MSU | GR | NEER, GARRETT | Development of noise cleaning for vuvuzela noise | US In-Kind | | | 0.20 | | 0.20 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | US | MSU | GR | RYSEWYK, DEVYN | Work on improved modeling of hadronic showers in reconstruction | US In-Kind | | | 0.30 | | 0.30 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | US | PSU | PO | ARLEN, TIM | Develop analysis tools for systematics study | Base Grants | | 0.20 | | | 0.20 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | US | PSU | GR | KEIVANI, AZADEH | Integrate IceCube into AMON | US In-Kind | | | 0.25 | | 0.25 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | US | SUBR | KE | FAZELY, ALI | Reconstruction/ Analysis tools | US In-Kind | | | 0.15 | | 0.15 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | US | SUBR | SC | XIANWU, XU | Reconstruction/ Analysis tools | US In-Kind | | | 0.15 | | 0.15 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | US | UA | KE | TOALE, PATRICK | Tau reconstruction tools | US In-Kind | | | 0.05 | | 0.05 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | US | DREXEL | KE | NEILSON, NAOKO | Optimization of veto techniques for PS | US In-Kind | | | 0.10 | | 0.10 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | US | DREXEL | GR | WILLS, ELIZABETH | Shadow of Moon study of IceCube performance | US In-Kind | | | 0.20 | | 0.20 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | US | UD | PO | GONZALEZ, JAVIER | Software maintenance : Event reco and corsika reader | Base Grants | | 0.20 | | | 0.20 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | US | UD | PO | DEMBINSKI, HANS | Code review strike team; IceTop simulations | Base Grants | | 0.30 | | | 0.30 |

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|--|--------------------------------------|-------------|-----------------|-------------|--------------------|---|-----------------------------|--------------|-----------------|----------------------------|-------------------------------|-------------|
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | UAA | KE | RAWLINS, KATHERINE | Snow correction for IceTop | US In-Kind | | | 0.20 | | 0.20 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | UMD | PO | FELDE, JOHN | Develop & test reconstruction | Base Grants | | 0.10 | | | 0.10 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | UMD | GR | MAUNU, RYAN | Reconstruction/ Analysis tools | Base Grants | | 0.13 | | | 0.13 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | UMD | SC | OLIVAS, ALEX | SW Coordinator – Data Quality, Reconstruction and Sim. Programs | NSF M&O Core | 0.25 | | | | 0.25 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | UMD | GR | CHEUNG, ELIM | Low energy Reco./Analysis tools | Base Grants | | 0.25 | | | 0.25 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | PSU | GR | LANFRANCHI, JUSTIN | Low energy event reconstruction quality | US In-Kind | | | 0.47 | | 0.47 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | SBU | GR | NIEDERHAUSEN, HANS | Cascade reconstruction | Base Grants | | 0.05 | | | 0.05 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | SBU | GR | YIQIAN XU | Flashers/Standard Candle | Base Grants | | 0.10 | | | 0.10 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | SDSMT | GR | DVORAK, EMILY | Prompt signals in high energy air showers | US In-Kind | | | 0.55 | | 0.55 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | UW | SC | CHIRKIN, DMITRY | Reconstruction software | NSF M&O Core | 0.30 | | | | 0.30 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | UW | GR | JERO, KYLE | Event reconstruction, angular resolution | Base Grants | | 0.20 | | | 0.20 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | UW | GR | SABBATINI, LUCA | Shower reconstruction, flasher data | US In-Kind | | | 0.30 | | 0.30 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | UW | GR | TOBIN, MORIAH | Low energy event reconstruction (BiPed), spline service | Base Grants | | 0.30 | | | 0.30 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | UW | GR | GHORBANI, KEVIN | Muon time residuals/hole ice | Base Grants | | 0.25 | | | 0.25 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | UWRF | KE | MADSEN, JIM | Low-energy IceTop Extensions | NSF M&O Core | 0.10 | | | | 0.10 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | UWRF | KE | SEUNARINE, SURUJ | Low-Energy Extensions of IceTop | US In-Kind | | | 0.10 | | 0.10 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | Yale | KE | MARUYAMA, REINA | Coincident events between IceCube and DM-Ice, low energy reconstruction | US In-Kind | | | 0.05 | | 0.05 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | Yale | GR | HUBBARD, ANTONIA | Coincident events between IceCube and DM-Ice, characterization of untriggered IceCube events, low energy reconstruction | US In-Kind | | | 0.05 | | 0.05 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | US | US Total | | | | | 0.65 | 2.23 | 3.27 | | 6.15 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | ADELAIDE | KE | HILL, GARY | Event energy and direction reconstruction, millipede | Non-US In-kind | | | | 0.40 | 0.40 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | ADELAIDE | PO | WHELAN, BEN | Event energy and direction reconstruction, millipede | Non-US In-kind | | | | 1.00 | 1.00 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | ADELAIDE | GR | AARTSEN, MARK | Event energy and direction reconstruction, millipede | Non-US In-kind | | | | 0.50 | 0.50 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | ALBERTA | GR | WOOD, TANIA | Calibrations with LED and minimum ionizing muons | Non-US In-kind | | | | 0.35 | 0.35 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | MAINZ | GR | BAUM, VOLKER | Low energy systematics | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | UC | GR | MUNAWARA, KIRAN | Flasher | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | CHIBA | KE | YOSHIDA, SHIGERU | Maintain Romeo, EHE Simulations, Calibration using Standard Candles | Non-US In-kind | | | | 0.20 | 0.20 |

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|--|--------------------------------------|-------------|-------------|-------------|------------------------------|---|-----------------------------|--------------|-----------------|----------------------------|-------------------------------|-------------|
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | CHIBA | KE | KEIICHI MASE | Maintain Romeo, EHE Simulations, Maintain reconstruction projects (Portia), MC/Data comparison for EHE-filtered and IceTop events, Standard Candle Analysis | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | CHIBA | SC | ISHIHARA, AYA | Maintain Portia and the SC data filtering | Non-US In-kind | | | | 0.15 | 0.15 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | CHIBA | PO | RELICH, MATTHEW | Standard Candle data analysis for calibrating DOM and ice | Non-US In-kind | | | | 0.15 | 0.15 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | CHIBA | PO | RELICH, MATTHEW | EHE online pipeline for gamma-ray follow-up | Non-US In-kind | | | | 0.15 | 0.15 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | CHIBA | GR | CHIBA GR | Improve the Ice Model, Afterpulse Simulator, Standard Candle Analysis, Maintain reconstruction projects (Ophelia, ehe-star) | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | DESY | SC | YANEZ, JUAN-PABLO | Low-energy reconstruction | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | DESY | SC | Santen, Jakob | Spline fits | Non-US In-kind | | | | 0.15 | 0.15 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | DESY | GR | MOHRMANN, LARS | Likelihood fit package | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | DESY | GR | KINTSCHER, THOMAS | Gamma-ray follow up program maintenance | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | DESY | GR | TERLIUK, ANDRII | Reconstruction Release Manager, Maintain Reconstruction Framework, DeepCore reconstruction | Non-US In-kind | | | | 0.30 | 0.30 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | DESY | GR | USNER, MARCEL | Spline fits with anisotropy | Non-US In-kind | | | | 0.30 | 0.30 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | DESY | GR | STASIK, ALEXANDER | Online singlet stream | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | ULB | KE | AGUILAR SANCHEZ JUAN ANTONIO | GRB, point-sources | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | ULB | GR | Raab, Christoph | Muon reconstructions for IceCube-Gen2 | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | RWTH | GR | VEHRING, MARKUS | CLSIM Hyrid maintenance | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | RWTH | GR | WALLRAFF, MARIUS | nuCraft | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | RWTH | GR | LEUERMANN, MARTIN | Finite track reconstruction, PegLeg Reconstruction | Non-US In-kind | | | | 0.30 | 0.30 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | SKKU | PO | BOSE, DEBANJAN | Photon tracking / ice-properties calibration | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | SU | GR | WOLF, MARTIN | STTools, EventViewer | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | VUB | KE | VAN EIJDHOVEN, NICK | development of reconstruction tools (IcePack framework) | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | VUB | PO | DE VRIES, KRIJN | muon track reconstruction in IceCube and DeepCore | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | VUB | PO | Lünemann, Jan | Low energy muon reconstruction | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | VUB | PO | Toscano, Simona | optimization of the geometry and the track reconstruction | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.5 Data Quality, Reconstruction Tools | 2.5.2 Reconstruction/ Analysis Tools | Non-US | VUB | GR | GIULIANO, MAGGI | muon track reconstruction in IceCube and DeepCore | Non-US In-kind | | | | 0.25 | 0.25 |

IceCube M&O Staffing Matrix sort by WBS v19.1 2015.1115.xls

| WBS L2 | WBS L3 | US / Non-US | Institution | Lab or Cat. | Names | Tasks | Source of Funds (U.S. Only) | NSF M&O Core | NSF Base Grants | U.S. Institutional In-Kind | Europe & Asia Pacific In-Kind | Grand Total |
|----------------------------------|--------------------------------------|---------------|----------------------------|-------------|---------------------|---|-----------------------------|--------------|-----------------|----------------------------|-------------------------------|--------------|
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | Non-US | VUB | GR | CASIER MARTIN | muon track reconstruction in IceCube and DeepCore | Non-US In-kind | | | | 0.50 | 0.50 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | Non-US | VUB | GR | BRAYEUR LIONEL | muon track reconstruction in IceCube and DeepCore | Non-US In-kind | | | | 0.50 | 0.50 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | Non-US | ALBERTA | KE | GRANT, DARREN | Maintenance of IceCube-Photonics interface | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | Non-US | ALBERTA | KE | KOPPER, CLAUDIO | Icetray framework maintenance | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | Non-US | ALBERTA | KE | KOPPER, CLAUDIO | Maintenance of clsim direct photon propagation tool | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | Non-US | WUPPERTAL | GR | WUPPERTAL GR | New SUSY Reconstruction, Simulation, Propagation, Monopole, Photonics, muon detection with IceTop | Non-US In-kind | | | | 0.60 | 0.60 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | Non-US | MAINZ | GR | WIEBE, KLAUS | Angular res. Cascades | Non-US In-kind | | | | 0.20 | 0.20 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | Non-US | ERLANGEN | GR | ALTMANN, DAVID | Track reconstruction | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | Non-US | Toronto | KE | CLARK, KENNETH | Development of low-energy reconstruction techniques | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | Non-US | Non-US Non-US Total | | | | | | | | 9.40 | 9.40 |
| 2.5 Data Quality, Reconstruction | 2.5.2 Reconstruction/ Analysis Tools | US | US Total | | | | | 0.65 | 2.23 | 3.27 | 9.40 | 15.55 |
| 2.5 Data Quality, Reconstruction | 2.5.3 Data Quality | Non-US | TUM | PO | MPI PO | Data Quality & DeepCore | Non-US In-kind | | | | 0.60 | 0.60 |
| 2.5 Data Quality, Reconstruction | 2.5.3 Data Quality | Non-US | DPNC | KE | MONTARULI, TERESA | Data and Simulation Quality | Non-US In-kind | | | | 0.10 | 0.10 |
| 2.5 Data Quality, Reconstruction | 2.5.3 Data Quality | Non-US | DPNC | GR | ASEN, CHRISTOV | Data and Simulation Quality | Non-US In-kind | | | | 0.30 | 0.30 |
| 2.5 Data Quality, Reconstruction | 2.5.3 Data Quality | Non-US | DPNC | GR | RAAMEZ MOHAMED | Data and Simulation Quality | Non-US In-kind | | | | 0.30 | 0.30 |
| 2.5 Data Quality, Reconstruction | 2.5.3 Data Quality | Non-US | DPNC | PO | HELLER, MATTHIEU | Data and Simulation Quality | Non-US In-kind | | | | 0.05 | 0.05 |
| 2.5 Data Quality, Reconstruction | 2.5.3 Data Quality | Non-US | VUB | KE | VAN EIJDHOVEN, NICK | data quality verification | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.5 Data Quality, Reconstruction | 2.5.3 Data Quality | Non-US | VUB | GR | GIULIANO, MAGGI | AGN analysis | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.5 Data Quality, Reconstruction | 2.5.3 Data Quality | Non-US | VUB | PO | DE VRIES, KRIJN | GRB/AGN analysis | Non-US In-kind | | | | 0.25 | 0.25 |
| 2.5 Data Quality, Reconstruction | 2.5.3 Data Quality | Non-US | Non-US Non-US Total | | | | | | | | 2.10 | 2.10 |
| 2.5 Data Quality, Reconstruction | 2.5.3 Data Quality | US | US Total | | | | | 0.00 | 0.00 | 0.00 | 2.10 | 2.10 |
| 2.5 Data Quality, Reconstruction | 2.5.4 Offline Data Processing | US | UW | PO | WANDKOWSKY, NANCY | Level 2 offline processing – co-coordinator | Base Grants | | 0.20 | | | 0.20 |
| 2.5 Data Quality, Reconstruction | 2.5.4 Offline Data Processing | US | US Total | | | | | 0.00 | 0.20 | 0.00 | 0.00 | 0.20 |
| 2.5 Data Quality, Reconstruction | 2.5.4 Offline Data Processing | Non-US | Non-US Total | | | | | | | | 0.00 | 0.00 |
| 2.5 Data Quality, Reconstruction | 2.5.4 Offline Data Processing | US | US Total | | | | | 0.00 | 0.20 | 0.00 | 0.00 | 0.20 |
| 2.5 Data Quality, Reconstruction | 2.5.4 Offline Data Processing | Non-US | Non-US Total | | | | | 1.93 | 3.18 | 5.37 | 14.25 | 24.72 |
| Grand Total | | | | | | | | 35.29 | 9.10 | 13.56 | 38.10 | 96.04 |