IceCube M&O Staffing Matrix sort by WBS v28.0 2020.06

WBS L2	WBS L3	Institution	Lab or Cat.	Names	Tasks	Source of Funds (U.S. Only)	NSF M&O Core	NSF Base Grants	U.S. Institutional In-Kind	Non-U.S. Institutional In-Kind	Grand Total
2.1 Program Management	2.1.1 Administration	LBNL	KE	KLEIN, SPENCER	Supervise LBNL effort	NSF M&O Core	0.05				0.05
2.1 Program Management	2.1.1 Administration	LBNL	KE	KLEIN, SPENCER	Gen2 HEA/Surface working group	US In-Kind				0.05	0.05
2.1 Program Management	2.1.1 Administration	UW	MA	MADSEN, JIM	Associate Director for Education & Outreach	NSF M&O Core	0.50				0.50
2.1 Program Management	2.1.1 Administration	DREXEL	KE	NEILSON, NAOKO	ICB member	US In-Kind				0.05	0.05
2.1 Program Management	2.1.1 Administration	GTECH	KE	TABOADA, IGNACIO	Member of the IceCube Impact Award committee	Base Grants		0.05			0.05
2.1 Program Management	2.1.1 Administration	GTECH	KE	TABOADA, IGNACIO	ICB member	US In-Kind				0.05	0.05
2.1 Program Management	2.1.1 Administration	MARQUETTE	KE	ANDEEN, KAREN	Program Administration	US In-Kind				0.20	0.20
2.1 Program Management	2.1.1 Administration	MERCER	KE	MCNALLY, FRANK	Program administration	US In-Kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	HARVARD	KE	ARGUELLES, CARLOS	Beyond Standard Model working group technical leader and ICB member	US In-Kind				0.20	0.20
2.1 Program Management	2.1.1 Administration	MIT	KE	CONRAD, JANET	ICB member	US In-Kind				0.05	0.05
2.1 Program Management	2.1.1 Administration	MSU	KE	DEYOUNG, TYCE	ExecCom member	US In-Kind				0.05	0.05
2.1 Program Management	2.1.1 Administration	PSU	PO	ELLER, PHILIPP	ICC member	Base Grants		0.05			0.05
2.1 Program Management	2.1.1 Administration	UD	KE	SECKEL, DAVID	Institutional Lead	US In-Kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	UD	KE	SCHROEDER, FRANK	TFT Board	US In-Kind				0.05	0.05
2.1 Program Management	2.1.1 Administration	UD	SC	TILAV, SERAP	ICC member		0.05				0.05
2.1 Program Management	2.1.1 Administration	UD	SC	TILAV, SERAP	M&O management		0.05				0.05
2.1 Program Management	2.1.1 Administration	UD	PO	SOLDIN, DENNIS	ICC member	Base Grants		0.05			0.05
2.1 Program Management	2.1.1 Administration	UD	PO	SOLDIN, DENNIS	CR-WG co-lead	Base Grants		0.20			0.20
2.1 Program Management	2.1.1 Administration	UMD	KE	SULLIVAN, GREG	ExecCom member	US In-Kind				0.20	0.20
2.1 Program Management	2.1.1 Administration	UMD	KE	SULLIVAN, GREG	M&O planning	US In-Kind				0.30	0.30
2.1 Program Management	2.1.1 Administration	UMD	SC	BLAUFUSS, ERIK	ICC member	Base Grants		0.05			0.05
2.1 Program Management	2.1.1 Administration	UMD	PO	OLIVAS, ALEX	ICC member	Base Grants		0.05			0.05
2.1 Program Management	2.1.1 Administration	UA	KE	WILLIAMS, DAWN	Alabama Institutional Lead	US In-Kind				0.05	0.05
2.1 Program Management	2.1.1 Administration	UA	KE	SANTANDER, MARCOS	Realtime Oversight Committee member	US In-Kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	UA	KE	SANTANDER, MARCOS	Publications Committee member	US In-Kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	ROCHESTER	KE	BENZVI, SEGEV	Supernova Working Group Co-convener	US In-Kind				0.05	0.05
2.1 Program Management	2.1.1 Administration	ROCHESTER	KE	BENZVI, SEGEV	ICB member	US In-Kind				0.05	0.05
2.1 Program Management	2.1.1 Administration	ROCHESTER	KE	BENZVI, SEGEV	PubComm Chair	US In-Kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	SBU	KE	KIRYLUK, JOANNA	Member of ICB Speakers committee chair	US In-Kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	SDSMT	KE	XINHUA, BAI	SDSMT Institutional Lead	US In-Kind				0.30	0.30
2.1 Program Management	2.1.1 Administration	UW	KE	HALZEN, FRANCIS	Principle Investigator	NSF M&O Core	0.38				0.38
2.1 Program Management	2.1.1 Administration	UW	KE	HALZEN, FRANCIS	Principle Investigator	US In-Kind				0.12	0.12
2.1 Program Management	2.1.1 Administration	UW	KE	KARLE, ALBRECHT	Associate Director for Science	NSF M&O Core	0.38				0.38
2.1 Program Management	2.1.1 Administration	UW	KE	KARLE, ALBRECHT	ExecCom member	US In-Kind				0.20	0.20
2.1 Program Management	2.1.1 Administration	UW	KE	HANSON, KAEL	Director of IceCube Maintenance and Operations	NSF M&O Core	0.47				0.47
2.1 Program Management	2.1.1 Administration	UW	KE	HANSON, KAEL	Director of IceCube Maintenance and Operations	US In-Kind				0.08	0.08
2.1 Program Management	2.1.1 Administration	UW	KE	VANDENBROUCKE, JUSTIN	Pubcom member, TFT member	US In-Kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	UW	AD	VAKHNINA, CATHERINE	IceCube Resource Coordinator	NSF M&O Core	0.75				0.75
2.1 Program Management	2.1.1 Administration	**US Total**					**2.63**	**0.45**	**2.75**		**5.83**
2.1 Program Management	2.1.1 Administration	MSU	KE	GRANT, DARREN	Collaboration Spokesperson	US In-Kind				0.50	0.50
2.1 Program Management	2.1.1 Administration	MSU	KE	GRANT, DARREN	ExecCom member	US In-Kind				0.20	0.20
2.1 Program Management	2.1.1 Administration	BOCHUM	KE	TJUS, JULIA	Speakers Comm member	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	CHIBA	KE	ISHIHARA, AYA	Member of Speaker Comm	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	CHIBA	PO	LU, LU	Realtime Oversight Comm	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	DESY	KE	KOWALSKI, MAREK	ExecCom member	Non-US In-kind				0.10	0.10

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2.1 Program Management	2.1.1 Administration	DESY	KE	KOWALSKI, MAREK	IceCube extensions coordination	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	DESY	KE	FRANCKOWIAK, ANNA	ExecCom member	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	DESY	KE	FRANCKOWIAK, ANNA	ICC member	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	DESY	KE	FRANCKOWIAK, ANNA	Analysis coordinator	Non-US In-kind				0.25	0.25
2.1 Program Management	2.1.1 Administration	DESY	KE	ACKERMANN, MARKUS	ExecCom member	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	DESY	KE	VAN SANTEN, JAKOB	ICC Member	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	DPNC	KE	MONTARULI, TERESA	ICB Member, UHECR-neutrino coordinator	Non-US In-kind				0.15	0.15
2.1 Program Management	2.1.1 Administration	ERLANGEN	KE	ANTON, GISELA	Institutional lead	Non-US In-kind				0.20	0.20
2.1 Program Management	2.1.1 Administration	KIT	KE	HAUNGS, ANDREAS	Coordination	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	KIT	KE	ENGEL, RALPH	Coordination	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	MÜNSTER	KE	KAPPES, ALEXANDER	Institutional lead	Non-US In-kind				0.20	0.20
2.1 Program Management	2.1.1 Administration	MÜNSTER	KE	KAPPES, ALEXANDER	Chair IceCube Impact Award committee	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	NBI	KE	KOSKINEN, JASON	Pubcom member	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	SKKU	KE	ROTT, CARSTEN	PubComm member	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	SU	KE	FINLEY, CHAD	ICB Member	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.1 Administration	SU	KE	HULTQVIST, KLAS	ICB Member	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.1 Administration	SU	KE	FINLEY, CHAD	Pubcomm member	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	SU	KE	FINLEY, CHAD	Coordination with LIGO and ANTARES	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.1 Administration	SU	KE	WALCK, CHRISTIAN	Publications Bookkeeping	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.1 Administration	UC	KE	ADAMS, JENNI	ICB Member	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.1 Administration	UC	KE	ADAMS, JENNI	Pubcom member	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	UC	PO	AARTSEN, MARK	Analysis Reviewer (PS on Diff, 1+3 sterile)	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.1 Administration	UOX	KE	SARKAR, SUBIR	Pubcom member	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	UOX	KE	SARKAR, SUBIR	ICB Member	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.1 Administration	ULB	KE	AGUILAR SANCHEZ, JUAN ANTONIO	Institutional Lead	Non-US In-kind				0.20	0.20
2.1 Program Management	2.1.1 Administration	ULB	KE	AGUILAR SANCHEZ, JUAN ANTONIO	Member of PubCom	Non-US In-kind				0.20	0.20
2.1 Program Management	2.1.1 Administration	ULB	KE	AGUILAR SANCHEZ, JUAN ANTONIO	Beyond Standard Model WG co-Chair	Non-US In-kind				0.25	0.25
2.1 Program Management	2.1.1 Administration	ULB	KE	TOSCANO, SIMONA	Member of PubCom	Non-US In-kind				0.20	0.20
2.1 Program Management	2.1.1 Administration	VUB	KE	VAN EIJNDHOVEN, NICK	Institutional Lead	Non-US In-kind				0.20	0.20
2.1 Program Management	2.1.1 Administration	VUB	KE	DE VRIES, KRIJN	Institutional Co-Lead	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.1 Administration	MAINZ	KE	BOSSER, SEBASTIAN	LE/osc WG co-chair	Non-US In-kind				0.25	0.25
2.1 Program Management	2.1.1 Administration	**Non-US Total**								4.25	4.25
2.1 Program Management	**2.1.1 Administration**						2.63	0.45	2.75	4.25	10.08
2.1 Program Management	2.1.2 Engineering and R&D Support	PSU	KE	COWEN, DOUG	Upgrade Co-PI; Publication Committee	US In-Kind			0.35		0.35
2.1 Program Management	2.1.2 Engineering and R&D Support	UMD	KE	HOFFMAN, KARA	Detector R&D	US In-Kind			0.20		0.20
2.1 Program Management	2.1.2 Engineering and R&D Support	UMD	GR	FREIDMAN, LIZ	Detector R&D	Base Grants		0.25			0.25
2.1 Program Management	2.1.2 Engineering and R&D Support	UW	SC	DUVERNOIS, MICHAEL	Specialized calibrations, SPICE core project coordination, extracting specialized information	NSF M&O Core	0.25				0.25
2.1 Program Management	2.1.2 Engineering and R&D Support	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 and R&D Support	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 and R&D Support	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 and R&D Support	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 and R&D Support	**US Total**					1.10	0.25	0.55		1.90
2.1 Program Management	2.1.2 Engineering and R&D Support	GENT	SC	UGENT SC	Acoustic R&D Support	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.2 Engineering and R&D Support	RWTH	GR	SCHAUFEL, MERLIN	IceAct Hardware R&D	Non-US In-kind				0.20	0.20
2.1 Program Management	2.1.2 Engineering and R&D Support	ULB	KE	MARIS, IOANA	SiPM characterization	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.2 Engineering and R&D Support	ULB	KE	TOSCANO, SIMONA	Hybrid detection Radio/In-Ice	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.2 Engineering and R&D Support	**Non-US Total**								0.45	0.45

WBS L2	WBS L3	Institution	Lab or Cat.	Names	Tasks	Source of Funds (U.S. Only)	NSF M&O Core	NSF Base Grants	U.S. Institutional In-Kind	Non-U.S. Institutional In-Kind	Grand Total
2.1 Program Management	**2.1.2 Engineering and R&D Support**						1.10	0.25	0.55	0.45	2.35
2.1 Program Management	2.1.3 Usap Support & Safety	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 & Safety	UW	MA	ZERNICK, MICHAEL	Safety manager	NSF M&O Core	0.25				0.25
2.1 Program Management	2.1.3 Usap Support & Safety	DREXEL	KE	NEILSON, NAOKO	South Pole Population planning committee	US In-Kind				0.05	0.05
2.1 Program Management	2.1.3 Usap Support & Safety	**US Total**					0.45	0.00	0.05		0.50
2.1 Program Management	**2.1.3 Usap Support & Safety**						0.45	0.00	0.05		0.50
2.1 Program Management	2.1.4 Education & Outreach	DREXEL	KE	NEILSON, NAOKO	Diversity Group member	US In-Kind			0.05		0.05
2.1 Program Management	2.1.4 Education & Outreach	DREXEL	KE	NEILSON, NAOKO	Being the collaboration Ombudsperson	US In-Kind			0.10		0.10
2.1 Program Management	2.1.4 Education & Outreach	HARVARD	KE	ARGUELLES, CARLOS	Outreach activities in the Boston area	US In-Kind			0.05		0.05
2.1 Program Management	2.1.4 Education & Outreach	PSU	KE	COWEN, DOUG	Education & Outreach	US In-Kind			0.05		0.05
2.1 Program Management	2.1.4 Education & Outreach	PSU	KE	FOX, DEREK	Education & Outreach	US In-Kind			0.05		0.05
2.1 Program Management	2.1.4 Education & Outreach	MERCER	KE	MCNALLY, FRANK	IceCube MasterClass	US In-Kind			0.05		0.05
2.1 Program Management	2.1.4 Education & Outreach	MIT	KE	CONRAD, JANET	CosmicWatch	US In-Kind			0.05		0.05
2.1 Program Management	2.1.4 Education & Outreach	MSU	KE	GRANT, DARREN	Education & Outreach	US In-Kind			0.05		0.05
2.1 Program Management	2.1.4 Education & Outreach	MSU	KE	KOPPER, CLAUDIO	IceCube MasterClass	US In-Kind			0.10		0.10
2.1 Program Management	2.1.4 Education & Outreach	MSU	GR	RYSEWYK CANTU, DEVYN	IceCube MasterClass	US In-Kind			0.02		0.02
2.1 Program Management	2.1.4 Education & Outreach	MSU	GR	SANCHEZ HERRERA, SEBASTIAN	IceCube Masterclass	US In-Kind			0.02		0.02
2.1 Program Management	2.1.4 Education & Outreach	MSU	GR	MICALLEF, JESSIE	IceCube MasterClass	Base Grants		0.02			0.02
2.1 Program Management	2.1.4 Education & Outreach	MSU	GR	PEISKER, ALISON	IceCube MasterClass	Base Grants		0.02			0.02
2.1 Program Management	2.1.4 Education & Outreach	MSU	GR	HARNISCH, ALEXANDER	IceCube MasterClass	US In-Kind			0.02		0.02
2.1 Program Management	2.1.4 Education & Outreach	MSU	GR	TWAGIRAYEZU, JEAN PIERRE	IceCube MasterClass	US In-Kind			0.02		0.02
2.1 Program Management	2.1.4 Education & Outreach	ROCHESTER	KE	BENZVI, SEGEV	IceCube MasterClass	US In-Kind			0.05		0.05
2.1 Program Management	2.1.4 Education & Outreach	SDSMT	KE	XINHUA, BAI	Education & Outreach for neutrino astronomy and IceCube	US In-Kind			0.10		0.10
2.1 Program Management	2.1.4 Education & Outreach	SDSMT	GR	LEON SILVERIO, DIANA	Education & Outreach for neutrino astronomy and IceCube	US In-Kind			0.05		0.05
2.1 Program Management	2.1.4 Education & Outreach	SBU	KE	KIRYLUK, JOANNA	Masterclasses, IceCube outreach activities in NY area	US In-Kind			0.05		0.05
2.1 Program Management	2.1.4 Education & Outreach	UA	KE	WILLIAMS, DAWN	IceCube Outreach	US In-Kind			0.05		0.05
2.1 Program Management	2.1.2 Education & Outreach	UA	KE	SANTANDER, MARCOS	IceCube Outreach	US In-Kind			0.05		0.05
2.1 Program Management	2.1.4 Education & Outreach	UCB	KE	PRICE, BUFORD	Institutional lead	US In-Kind			0.10		0.10
2.1 Program Management	2.1.4 Education & Outreach	UMD	KE	UMD KE	Education & Outreach	US In-Kind			0.10		0.10
2.1 Program Management	2.1.4 Education & Outreach	UTA	KE	JONES, BENJAMIN	UTA astroparticle physics summer school for high school students	US In-Kind			0.05		0.05
2.1 Program Management	2.1.4 Education & Outreach	UW	AD	STEFFES, LINDSEY	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	UW	AD	DEMERIT, JEAN	Editor / science writer, E&O support	NSF M&O Core	0.25				0.25
2.1 Program Management	2.1.4 Education & Outreach	UW	AD	CHILDRESS-BECHTOL, ELLEN	Evaluation support: framework design and implementation for Broader Impacts program	NSF M&O Core	0.50				0.50
2.1 Program Management	2.1.4 Education & Outreach	**US Total**					1.50	0.04	1.23		2.77
2.1 Program Management	2.1.4 Education & Outreach	DESY	GR	BROSTEAN-KAISER, JANNES	Organization of IceCube master classes at DESY	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.4 Education & Outreach	DPNC	KE	MONTARULI, TERESA	Responsible of Analysis Output of the group, Advising of students, Masterclass	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.4 Education & Outreach	DPNC	GR	LUCARELLI FRANCESCO	MasterClass IceCube and Nuit de la Science 2018	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.4 Education & Outreach	DPNC	GR	ALISPACH, CYRIL	Masterclass IceCube et Nuit de La Science 2018	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.4 Education & Outreach	MAINZ	GR	UM GR	I3 virtual reality	Non-US In-kind				0.25	0.25
2.1 Program Management	2.1.4 Education & Outreach	MÜNSTER	PO	CLASSEN, LEW	Public outreach	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.4 Education & Outreach	MÜNSTER	GR	BUSSE, RAFFAELA	Public outreach	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.4 Education & Outreach	NBI	KE	KOSKINEN, JASON	Speaking engagements (high school classes, open houses, etc.)	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.4 Education & Outreach	NBI	GR	BOURBEAU, ETIENNE	Speaking Engagements	Non-US In-kind				0.05	0.05

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2.1 Program Management	2.1.4 Education & Outreach	RWTH	KE	WIEBUSCH, CHRISTOPHER	AIS3	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.4 Education & Outreach	RWTH	GR	HALVE, LASSE	Netzwerk Teilchenwelt	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.4 Education & Outreach	SU	KE	HULTQVIST, KLAS	Masterclasses, model, etc	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.4 Education & Outreach	SU	KE	FINLEY, CHAD	Masterclasses, model, etc	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.4 Education & Outreach	ULB	KE	AGUILAR SANCHEZ, JUAN ANTONIO	Masterclass	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.4 Education & Outreach	ULB	KE	TOSCANO, SIMONA	Masterclass	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.4 Education & Outreach	ULB	PO	BAUR, SEBASTIAN	Masterclass	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.4 Education & Outreach	UOX	KE	SARKAR, SUBIR	Education & Outreach	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.4 Education & Outreach	UU	KE	HALLGREN, ALLAN	Outreach	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.4 Education & Outreach	UU	KE	BOTNER, OLGA	Education & Outreach	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.4 Education & Outreach	UU	KE	DE LOS HEROS, CARLOS	Outreach	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.4 Education & Outreach	UU	KE	O´SULLIVAN, ERIN	Outreach	Non-US In-kind				0.05	0.05
2.1 Program Management	2.1.4 Education & Outreach	VUB	KE	DE CLERCQ, CATHERINE	Education and Outreach	Non-US In-kind				0.20	0.20
2.1 Program Management	2.1.4 Education & Outreach	VUB	KE	DE VRIES, KRIJN	Education & Outreach	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.4 Education & Outreach	VUB	GR	CORREA, PABLO	Education & Outreach	Non-US In-kind				0.15	0.15
2.1 Program Management	2.1.4 Education & Outreach	VUB	GR	DE KOCKERE, SIMON	Education & Outreach	Non-US In-kind				0.10	0.10
2.1 Program Management	2.1.4 Education & Outreach	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 Total**								2.20	2.20
2.1 Program Management	**2.1.4 Education & Outreach**						1.50	0.04	1.23	2.20	4.97
2.1 Program Management	2.1.5 Communications	UW	AD	O'KEEFE, MADELEINE	Communication plan manager, science writer. Masterclass and communication workshop coordinator	NSF M&O Core	0.75				0.75
2.1 Program Management	2.1.5 Communications	**US Total**					0.75	0.00	0.00		0.75
2.1 Program Management	**2.1.5 Communications**						0.75	0.00	0.00		0.75
2.1 Program Management	**WBS L2 Total**						6.43	0.74	4.58	6.90	18.65
2.2 Detector Operations & Mainte	2.2 Detector Operations & Maintenance	UW	SC	KELLEY, JOHN	Detector Maintenance and Operations Manager	NSF M&O Core	0.65				0.65
2.2 Detector Operations & Mainte	2.2 Detector Operations & Maintenance	UW	SC	DESIATI, PAOLO	IceCube Coordination Committee chair	NSF M&O Core	0.30				0.30
2.2 Detector Operations & Mainte	2.2 Detector Operations & Maintenance	UW	MA	HAUGEN, JAMES	Logistics Manager	NSF M&O Core	0.15				0.15
2.2 Detector Operations & Mainte	2.2 Detector Operations & Maintenance	UMD	PO	OLIVAS, ALEX	SW Coordinator – Detector M&O	NSF M&O Core	0.35				0.35
2.2 Detector Operations & Mainte	2.2 Detector Operations & Maintenance	**US Total**					1.45	0.00	0.00		1.45
2.2 Detector Operations & Mainte	2.2 Detector Operations & Maintenance	**Non-US Total**									0.00
2.2 Detector Operations & Mainte	**2.2 Detector Operations & Maintenance**						1.45	0.00	0.00	0.00	1.45
2.2 Detector Operations & Mainte	2.2.1 Run Coordination	UW	IT	AUER, RALF	Winterovers coordinator, hiring and training of winterovers	NSF M&O Core	0.20				0.20
2.2 Detector Operations & Mainte	2.2.1 Run Coordination	UW	SC	KAUER, MATTHEW	Run Coordinator	NSF M&O Core	0.40				0.40
2.2 Detector Operations & Mainte	2.2.1 Run Coordination	UW	WO	UW WINTER OVERS	Operate Detector (Winter-Overs)	NSF M&O Core	3.00				3.00
2.2 Detector Operations & Mainte	2.2.1 Run Coordination	**US Total**					3.60	0.00	0.00	0.00	3.60
2.2 Detector Operations & Mainte	**2.2.1 Run Coordination**						3.60	0.00	0.00		3.60
2.2 Detector Operations & Mainte	2.2.2 Data Acquisition	LBNL	EN	STEZELBERGER, THORSTEN	Maintain DAQ Hardware	NSF M&O Core	0.15				0.15
2.2 Detector Operations & Mainte	2.2.2 Data Acquisition	PSU	SC	ANDERSON, TYLER	DAQ Firmware Development	NSF M&O Core	0.23				0.23
2.2 Detector Operations & Mainte	2.2.2 Data Acquisition	PSU	GR	PANKOVA, DARIA	DAQ electronics hardware and firmware	US In-Kind			0.15		0.15
2.2 Detector Operations & Mainte	2.2.2 Data Acquisition	UW	EN	MEURES, THOMAS	Data Acquisition HW Maintenance: DOR, DOMHub and DOMCal	NSF M&O Core	0.10				0.10
2.2 Detector Operations & Mainte	2.2.2 Data Acquisition	UW	SC	KELLEY, JOHN	DOM software: DOR device driver, DOMHub scripts, DOMCal	NSF M&O Core	0.15				0.15
2.2 Detector Operations & Mainte	2.2.2 Data Acquisition	UW	SC	KELLEY, JOHN	Track DOM issues, generate detector run configurations	NSF M&O Core	0.10				0.10
2.2 Detector Operations & Mainte	2.2.2 Data Acquisition	UW	CS	GLOWACKI, DAVID	IceCube DAQ: trigger and event builder	NSF M&O Core	0.50				0.50
2.2 Detector Operations & Mainte	2.2.2 Data Acquisition	UW	CS	GLOWACKI, DAVID	IceCube DAQ: command-and-control server, testing infrastructure	NSF M&O Core	0.50				0.50
2.2 Detector Operations & Mainte	2.2.2 Data Acquisition	UW	CS	BENDFELT, TIMOTHY	IceCube DAQ: StringHub and domapp; Upgrade integration	NSF M&O Core	0.75				0.75
2.2 Detector Operations & Mainte	2.2.2 Data Acquisition	UW	GR	TY, BUNHENG	DOR Firmware	NSF M&O Core	0.25				0.25
2.2 Detector Operations & Mainte	2.2.2 Data Acquisition	**US Total**					2.73	0.00	0.15		2.88
2.2 Detector Operations & Mainte	**2.2.2 Data Acquisition**						2.73	0.00	0.15		2.88
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	MSU	KE	KOPPER, CLAUDIO	Diffuse WG co-chair	US In-Kind			0.25		0.25
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	MSU	KE	WHITEHORN, NATHAN	Diffuse WG co-chair	US In-Kind			0.25		0.25
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	PSU	PO	ELLER, PHILIPP	Oscillation Tech. Lead	Base Grants		0.20			0.20

WBS L2	WBS L3	Institution	Lab or Cat.	Names	Tasks	Source of Funds (U.S. Only)	NSF M&O Core	NSF Base Grants	U.S. Institutional In-Kind	Non-U.S. Institutional In-Kind	Grand Total
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	UMD	SC	BLAUFUSS, ERIK	Maintain PnF S/W and Online Filters	NSF M&O Core	0.20				0.20
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	UMD	CS	SCHMIDT, TORSTEN	Maintain and develop PnF software, support operations to respond to and debug unexpected errors	NSF M&O Core	0.50				0.50
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	UMD	PO	LARSON, MICHAEL	Near Real time alerts/GRB	Base Grants		0.10			0.10
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	UMD	GR	EVANS, JOHN	Near Real time alerts/GRB	Base Grants		0.10			0.10
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	UD	PO	SOLDIN, DENNIS	IceTop Filter	Base Grants		0.05			0.05
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	UD	GR	BINTA AMIN, MOUREEN	Including IceTop in ROC consideration	Base Grants		0.10			0.10
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	UW	SC	KAUER, MATTHEW	TFT Board member	US In-Kind			0.10		0.10
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	UMD	SC	BLAUFUSS, ERIK	Filter requests, bandwidth, TFT Board Member. IceTray	NSF M&O Core	0.10				0.10
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	UMD	GR	FREIDMAN, LIZ	Real-time & near real time alerts	Base Grants		0.35			0.35
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	UAA	KE	RAWLINS, KATHERINE	Cosmic Ray WG co-convener	US In-Kind			0.25		0.25
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	DREXEL	KE	NEILSON, NAOKO	TFT Board Co-Chair	US In-Kind			0.25		0.25
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	DREXEL	KE	NEILSON, NAOKO	Splitting – Q/P frame and coincidence	US In-Kind			0.05		0.05
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	SBU	GR	ZHANG, ZELONG	Cascade filter / L3	Base Grants		0.05			0.05
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	**US Total**					**0.80**	**0.95**	**1.15**		**2.90**
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	ALBERTA	KE	YANEZ, JUAN PABLO	Oscillations WG co-chair	Non-US In-kind				0.25	0.25
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	ALBERTA	PO	HIGNIGHT, JOSHUA	Reconstruction & Systematics WG co-chair	Non-US In-kind				0.25	0.25
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	DESY	KE	VAN SANTEN, JAKOB	Reco/Syst WG co-chair	Non-US In-kind				0.25	0.25
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	UU	KE	DE LOS HEROS, CARLOS	TFT Board member	Non-US In-kind				0.10	0.10
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	ALBERTA	KE	MOORE, ROGER	TFT Board Member	Non-US In-kind				0.10	0.10
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	CHIBA	KE	ISHIHARA, AYA	EHE Filters	Non-US In-kind				0.15	0.15
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	MAINZ	GR	SANDROOS, JOAKIM	PISA	Non-US In-kind				0.20	0.20
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	NBI	KE	AHLERS, MARKUS	Neutrino source WG co-convenor	Non-US In-kind				0.25	0.25
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	NBI	PO	STUTTARD, TOM	Oscillation WG co-convenor	Non-US In-kind				0.25	0.25
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	UC	PO	AARTSEN, MARK	Cascade filter	Non-US In-kind				0.05	0.05
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	DTMND	SC	RUHE, TIM	Physics filters	Non-US In-kind				0.20	0.20
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	DTMND	GR	HÜNNEFELD, MIRKO	Reconstruction	Non-US In-kind				0.30	0.30
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	DTMND	GR	MEIER, MAXIMILIAN	Physics filters	Non-US In-kind				0.20	0.20
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	RWTH	GR	BOETTCHER, JAKOB	SLOP Filter + Trigger	Non-US In-kind				0.10	0.10
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	RWTH	GR	BOETTCHER, JAKOB	Final level diffuse tests	Non-US In-kind				0.05	0.05
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	RWTH	GR	GANSTER, ERIK	Final level diffuse tests	Non-US In-kind				0.05	0.05
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	WUPPERTAL	KE	HELBING, KLAUS	BSM WG chair	Non-US In-kind				0.25	0.25
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	WUPPERTAL	KE	HELBING, KLAUS	BSM WG chair	Non-US In-kind				0.25	0.25
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	WUPPERTAL	PO	POLLMANN, ANNA	SLOP filter, Monopole filte	Non-US In-kind				0.25	0.25
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	WUPPERTAL	GR	LAUBER, FREDERIK	Detection of Magnetic Monopoles through radio luminescence	Non-US In-kind				0.20	0.20
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	ULB	GR	RENZI, GIOVANNI	Vertical event filter, WIMP L2	Non-US In-kind				0.20	0.20
2.2 Detector Operations & Mainte	2.2.3 Online Filter (Pnf)	**Non-US Total**								**3.90**	**3.90**
2.2 Detector Operations & Mainte	**2.2.3 Online Filter (Pnf)**						**0.80**	**0.95**	**1.15**	**3.90**	**6.80**
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	CAU	KE	JAPARIDZE, GEORGE	Detector monitoring shifts	US In-Kind			0.02		0.02
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	DREXEL	GR	SCLAFANI, STEVE	Detector monitoring shifts	US In-Kind			0.05		0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	GTECH	GR	PRANAV, DAVE	Detector monitoring shifts	US In-Kind			0.05		0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	SBU	GR	ZHANG, ZELONG	Detector Monitoring	Base Grants		0.05			0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	LBNL	PO	ROBERTSON, SALLY	Detector monitoring shifts	Base Grants		0.09			0.09
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	MSU	PO	NISA, MEHR	Detector monitoring shifts	US In-Kind			0.03		0.03
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	PSU	PO	ELLER, PHILIPP	Detector monitoring shifts	Base Grants		0.03			0.03
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	PSU	GR	LANFRANCHI, JUSTIN	Detector monitoring shifts	US In-Kind			0.03		0.03
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	PSU	GR	PANKOVA, DARIA	Detector monitoring shifts	US In-Kind			0.03		0.03
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	ROCHESTER	GR	CROSS, ROBERT	Detector monitoring shifts	US In-Kind			0.05		0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	ROCHESTER	GR	GRISWOLD, SPENCER	Detector monitoring shifts	US In-Kind			0.05		0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	SDSMT	KE	XINHUA, BAI	IceCube operation monitoring	US In-Kind			0.02		0.02
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	SDSMT	KE	LEON SILVERIO, DIANA	IceCube operation monitoring	US In-Kind			0.05		0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UA	KE	SANTANDER, MARCOS	Online Moon shadow analysis (monitoring)	US In-Kind			0.10		0.10

IceCube M&O Staffing Matrix sort by WBS v28.0 2020.06

WBS L2	WBS L3	Institution	Lab or Cat.	Names	Tasks	Source of Funds (U.S. Only)	NSF M&O Core	NSF Base Grants	U.S. Institutional In-Kind	Non-U.S. Institutional In-Kind	Grand Total
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UA	GR	GOSWAMI, SREETAMA	Online Moon shadow analysis (monitoring)	US In-Kind				0.10	0.10
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UA	GR	GOSWAMI, SREETAMA	Monitoring shifts	US In-Kind				0.05	0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UA	GR	GHADIMI, AVA	Monitoring shifts	US In-Kind				0.05	0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UA	GR	BRNICH, REBECCA	Monitoring shifts	US In-Kind				0.05	0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UCI	KE	BARWICK, STEVE	Detector monitoring shifts	US In-Kind			0.01		0.01
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UCI	GR	HANSON, JORDAN	Detector monitoring shifts	US In-Kind			0.01		0.01
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UD	SC	TILAV, SERAP	Data monitoring	NSF M&O Core	0.20				0.20
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UD	GR	PAUDEL, EK NARAYAN	Data monitoring	US In-Kind				0.10	0.10
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UD	GR	PUNSUEBSAY, NOPPODAL	Data monitoring	US In-Kind				0.10	0.10
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UMD	GR	UMD GR	Detector monitoring shifts	Base Grants		0.06			0.06
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UW	SC	KAUER, MATTHEW	Data Monitoring lead: coordinate test and feature development; design underlying analysis algorithms	NSF M&O Core	0.20				0.20
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UW	SC	KAUER, MATTHEW	Training and coordinating monitoring shifters	NSF M&O Core	0.10				0.10
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UW	CS	BRAUN, JAMES	I3MS Iridium messaging system software	NSF M&O Core	0.50				0.50
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UW	CS	FRERE, MICHAEL	IceCube Live lead developer	NSF M&O Core	0.75				0.75
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UW	CS	BURRESON, COLIN	IceCube Live monitoring system: web interface, databases	NSF M&O Core	0.90				0.90
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UW	CS	BURRESON, COLIN	Supernova alert interface, DAQ monitoring, and visualization in IceCube	NSF M&O Core	0.10				0.10
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UW	PO	KHEIRANDISH, ALI	Detector monitoring shifts, fast Response monitoring shifts	Base Grants		0.20			0.20
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UW	PO	UW PO	Detector monitoring shifts	Base Grants		0.08			0.08
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UW	GR	SAFA, IBRAHIM	Detector monitoring shifts	US In-Kind			0.10		0.10
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UW	GR	UW GR	Detector monitoring shifts	Base Grants		0.12			0.12
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	**US Total**					**2.75**	**0.63**	**1.05**		**4.43**
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	DESY	SC	DESY SC	Detector Monitoring	Non-US In-kind				0.05	0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	DESY	GR	DESY GR	Detector Monitoring	Non-US In-kind				0.12	0.12
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	DTMND	GR	DTMD GR	Detector Monitoring	Non-US In-kind				0.03	0.03
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	MAINZ	GR	FRITZ, ALEXANDER	SuperNova Operations	Non-US In-kind				0.40	0.40
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	NBI	GR	RIBERS, DAVID	Detector monitoring shifts	Non-US In-kind				0.05	0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	TUM	GR	MPI GR	Detector Monitoring	Non-US In-kind				0.05	0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	RWTH	GR	HALVE, LASSE	Detector monitoring shifts contact from Aachen	Non-US In-kind				0.05	0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	RWTH	GR	RWTH GR	Detector monitoring shifts	Non-US In-kind				0.12	0.12
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	SKKU	GR	KANG, WOOSIK	Detector Monitoring	Non-US In-kind				0.03	0.03
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	SU	GR	DEOSKAR, KUNAL	Detector Monitoring	Non-US In-kind				0.06	0.06
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UC	KE	ADAMS, JENNI	Detector Monitoring	Non-US In-kind				0.05	0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UC	PO	AARTSEN, MARK	Detector Monitoring	Non-US In-kind				0.02	0.02
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UC	GR	RAISSI, AMIR	Detector Monitoring	Non-US In-kind				0.03	0.03
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	ULB	KE	MARIS, IOANA	Detector Monitoring	Non-US In-kind				0.05	0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	ULB	GR	ULB GR	Detector Monitoring	Non-US In-kind				0.12	0.12
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	ULB	GR	IOVINE, NADÉGE	IceTop Snow Monitor	Non-US In-kind				0.20	0.20
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UU	GR	BURGMAN, ALEXANDER	Detector monitoring shifts	Non-US In-kind				0.03	0.03
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	UU	GR	VALTONEN-MATTILA, NORA	Detector monitoring shifts	Non-US In-kind				0.03	0.03
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	VUB	GR	VUB GR	Detector monitoring shifts	Non-US In-kind				0.06	0.06
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	WUPPERTAL	GR	WUPPERTAL GR	Monitoring shifts	Non-US In-kind				0.03	0.03
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	MAINZ	GR	UM GR	Detector Monitoring	Non-US In-kind				0.05	0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	GENT	GR	VERPOEST, STEF	Detector Monitoring	Non-US In-kind				0.03	0.03
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	DPNC	GR	LUCARELLI FRANCESCO	Detector Monitoring	Non-US In-kind				0.05	0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	DPNC	GR	ALISPACH, CYRIL	Detector Monitoring	Non-US In-kind				0.05	0.05
2.2 Detector Operations & Mainte	2.2.4 Detector Monitoring	**Non-US Total**								**1.76**	**1.76**
2.2 Detector Operations & Mainte	**2.2.4 Detector Monitoring**						**2.75**	**0.63**	**1.05**	**1.76**	**6.18**
2.2 Detector Operations & Mainte	2.2.5 Experiment Control	UW	CS	BRAUN, JAMES	IceCube LiveControl experiment control software: alerts and component	NSF M&O Core	0.50				0.50
2.2 Detector Operations & Mainte	2.2.5 Experiment Control	UW	CS	FRERE, MICHAEL	IceCube LiveControl experiment control software: operator interface	NSF M&O Core	0.25				0.25
2.2 Detector Operations & Mainte	2.2.5 Experiment Control	**US Total**					**0.75**	**0.00**	**0.00**		**0.75**
2.2 Detector Operations & Mainte	**2.2.5 Experiment Control**						**0.75**	**0.00**	**0.00**		**0.75**

WBS L2	WBS L3	Institution	Lab or Cat.	Names	Tasks	Source of Funds (U.S. Only)	NSF M&O Core	NSF Base Grants	U.S. Institutional In-Kind	Non-U.S. Institutional In-Kind	Grand Total
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	UD	SC	TILAV, SERAP	Coordinate IceTop Operations	NSF M&O Core	0.30				0.30
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	UD	KE	SCHROEDER, FRANK	Surface detector enhancements	US In-Kind			0.15		0.15
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	UD	GR	BINTA AMIN, MOUREEN	IceTop simulation	Base Grants		0.20			0.20
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	UD	GR	PAN, YUE	Radio operations, data management	US In-Kind			0.25		0.25
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	UD	GR	PAN, YUE	Radio monitoring	US In-Kind			0.10		0.10
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	UD	GR	PAN, YUE	Radio simulations	US In-Kind			0.05		0.05
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	MARQUETTE	KE	ANDEEN, KAREN	Surface detector R&D	US In-Kind			0.05		0.05
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	MARQUETTE	PO	PLUM, MATTHIAS	Surface detector R&D	US In-Kind			0.50		0.50
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	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 & Mainte	2.2.6 Surface Detector Operations	UW	SC	TOSI, DELIA	Test and commission experimental apparatus for restoring IceTop detector efficiency	NSF M&O Core	0.50				0.50
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	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 & Mainte	2.2.6 Surface Detector Operations	**US Total**					**1.20**	**0.20**	**1.10**		**2.50**
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	KIT	KE	HAUNGS, ANDREAS	Co-task leader scintillators	Non-US In-kind				0.10	0.10
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	KIT	SC	SCHIELER, HARALD	Construction (scintillator)	Non-US In-kind				0.10	0.10
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	KIT	SC	WEINDL	DAQ surface	Non-US In-kind				0.30	0.30
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	KIT	PO	DUJMOVIC, HRVOJE	Radio operation	Non-US In-kind				0.30	0.30
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	KIT	PO	HUBER, THOMAS	Scintillator operation	Non-US In-kind				0.30	0.30
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	KIT	GR	KOUNDAL, PARAS	Scintillator operation	Non-US In-kind				0.20	0.20
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	KIT	GR	OEHLER, MARIE	Scintillator operation	Non-US In-kind				0.20	0.20
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	KIT	GR	TURCOTTE, ROXANNE	Radio operation	Non-US In-kind				0.20	0.20
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	RWTH	GR	SCHAUFEL, MERLIN	IceAct Monitoring	Non-US In-kind				0.10	0.10
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	ULB	PO	MOCKLER, DANIELA	Validation between SLC signals and MC	Non-US In-kind				0.10	0.10
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	WUPPERTAL	GR	BINDIG, DANIEL	Laterally separated muons in IceTop	Non-US In-kind				0.20	0.20
2.2 Detector Operations & Mainte	2.2.6 Surface Detector Operations	**Non-US Total**								**2.10**	**2.10**
2.2 Detector Operations & Mainte	**2.2.6 Surface Detector Operations**						**1.20**	**0.20**	**1.10**	**2.10**	**4.60**
2.2 Detector Operations & Mainte	2.2.7 Supernova System	ROCHESTER	KE	BENZVI, SEGEV	Supernova DAQ	US In-Kind			0.05		0.05
2.2 Detector Operations & Mainte	2.2.7 Supernova System	ROCHESTER	GR	CROSS, ROBERT	Supernova DAQ	US In-Kind			0.15		0.15
2.2 Detector Operations & Mainte	2.2.7 Supernova System	ROCHESTER	GR	GRISWOLD, SPENCER	Supernova DAQ	US In-Kind			0.10		0.10
2.2 Detector Operations & Mainte	2.2.7 Supernova System	SUBR	KE	TER-ANTONYAN, SAMVEL	Supernova Data Analysis	US In-Kind			0.02		0.02
2.2 Detector Operations & Mainte	2.2.7 Supernova System	UW	CS	BENDFELT, TIMOTHY	IceCube DAQ: supernova interface, hitspooling	NSF M&O Core	0.25				0.25
2.2 Detector Operations & Mainte	2.2.7 Supernova System	Yale	KE	MARUYAMA, REINA	Supernova DAQ	US In-Kind			0.05		0.05
2.2 Detector Operations & Mainte	2.2.7 Supernova System	**US Total**					**0.25**	**0.00**	**0.37**		**0.62**
2.2 Detector Operations & Mainte	2.2.7 Supernova System	UU	KE	O´SULLIVAN, ERIN	Supernova WG co-chair	Non-US In-kind				0.15	0.15
2.2 Detector Operations & Mainte	2.2.7 Supernova System	UU	GR	VALTONEN-MATTILA, NORA	Responsibility for the hitspool data	Non-US In-kind				0.10	0.10
2.2 Detector Operations & Mainte	2.2.7 Supernova System	**Non-US Total**								**0.25**	**0.25**
2.2 Detector Operations & Mainte	**2.2.7 Supernova System**						**0.25**	**0.00**	**0.37**	**0.25**	**0.87**
2.2 Detector Operations & Mainte	2.2.8 Real-Time Alerts	GTECH	KE	TABOADA, IGNACIO	Member of the Real-time Oversight Committee (ROC)	Base Grants		0.10			0.10
2.2 Detector Operations & Mainte	2.2.8 Real-Time Alerts	GTECH	GR	CHEN, CHUJIE	Design of Alert DB and webpage	Base Grants		0.20			0.20
2.2 Detector Operations & Mainte	2.2.8 Real-Time Alerts	GTECH	GR	PRANAV, DAVE	Real-time shifter (under auspices of the ROC)	Base Grants		0.10			0.10
2.2 Detector Operations & Mainte	2.2.8 Real-Time Alerts	PSU	PO	AYALA, HUGO	Maintain IceCube integration with AMON; HESE cascades	US In-Kind			0.15		0.15
2.2 Detector Operations & Mainte	2.2.8 Real-Time Alerts	UW	GR	MANCINA, SARAH	Filter development (ESTES), DOM sensitivity	Base Grants		0.20			0.20
2.2 Detector Operations & Mainte	2.2.8 Real-Time Alerts	**US Total**					**0.00**	**0.60**	**0.15**		**0.75**
2.2 Detector Operations & Mainte	2.2.8 Real-Time Alerts	CHIBA	PO	LU, LU	Maintenance of IceCube realtime analysis system	Non-US In-kind				0.20	0.20
2.2 Detector Operations & Mainte	2.2.8 Real-Time Alerts	DESY	KE	FRANCKOWIAK, ANNA	Realtime oversight committee member	Non-US In-kind				0.10	0.10
2.2 Detector Operations & Mainte	2.2.8 Real-Time Alerts	DESY	GR	LAGUNAS GUALDA, CHRISTINA	Online data stream maintenance	Non-US In-kind				0.20	0.20
2.2 Detector Operations & Mainte	2.2.8 Real-Time Alerts	DESY	GR	STEIN, ROBERT	Online data stream maintenance	Non-US In-kind				0.10	0.10
2.2 Detector Operations & Mainte	2.2.8 Real-Time Alerts	SU	KE	FINLEY, CHAD	Realtime Oversight Committee	Non-US In-kind				0.05	0.05

WBS L2	WBS L3	Institution	Lab or Cat.	Names	Tasks	Source of Funds (U.S. Only)	NSF M&O Core	NSF Base Grants	U.S. Institutional In-Kind	Non-U.S. Institutional In-Kind	Grand Total
2.2 Detector Operations & Mainte	2.2.8 Real-Time Alerts	UU	PO	SHARMA, ANKUR	Development and automatization of alternative angular uncertainty measures for alert events	Non-US In-kind				0.20	0.20
2.2 Detector Operations & Mainte	2.2.8 Real-Time Alerts	Non-US Total								0.85	0.85
2.2 Detector Operations & Mainte	**2.2.8 Real-Time Alerts**						0.00	0.60	0.15	0.85	1.60
2.2 Detector Operations & Mainte	2.2.9 SPS/SPTS	UW	IT	AUER, RALF	Maintain South Pole computing H/W infrastructure and operating systems	NSF M&O Core	0.23				0.23
2.2 Detector Operations & Mainte	2.2.9 SPS/SPTS	UW	IT	AUER, RALF	Maintain South Pole Test System computing H/W Infrastructure and	NSF M&O Core	0.10				0.10
2.2 Detector Operations & Mainte	2.2.9 SPS/SPTS	UW	EN	SANDSTROM, PERRY	Maintain South Pole System H/W Infrastructure	NSF M&O Core	0.20				0.20
2.2 Detector Operations & Mainte	2.2.9 SPS/SPTS	UW	EN	MEURES, THOMAS	Maintain South Pole Test System H/W Infrastructure	NSF M&O Core	0.25				0.25
2.2 Detector Operations & Mainte	2.2.9 SPS/SPTS	US Total					0.78	0.00	0.00		0.78
2.2 Detector Operations & Mainte	**2.2.9 SPS/SPTS**						0.78	0.00	0.00		0.78
2.2 Detector Operations & Main	**WBS L2 Total**						14.31	2.38	3.96	8.86	29.51
2.3 Computing and Data Manage	2.3.0 Computing And Data Management	UW	MA	RIEDEL, BENEDIKT	Computing Infrastructure Manager	NSF M&O Core	0.90				0.90
2.3 Computing and Data Manage	2.3.0 Computing And Data Management	LBNL	KE	KLEIN,SPENCER	Oversee raw data storage at LBNL	US In-Kind			0.08		0.08
2.3 Computing and Data Manage	2.3.0 Computing And Data Management	US Total					0.90	0.00	0.08		0.98
2.3 Computing and Data Manage	2.3.0 Computing And Data Management	KIT	SC	KANG, DONGHWA	Middleware Setup	Non-US In-kind				0.15	0.15
2.3 Computing and Data Manage	2.3.0 Computing And Data Management	Non-US Total								0.15	0.15
2.3 Computing and Data Manage	**2.3.0 Computing And Data Management**						0.90	0.00	0.08	0.15	1.13
2.3 Computing and Data Manage	2.3.1 Data Storage & Transfer	UW	IT	BARNET, STEVE	Maintain and Operate Data Storage Infrastructure	NSF M&O Core	0.30				0.30
2.3 Computing and Data Manage	2.3.1 Data Storage & Transfer	UW	IT	BELLINGER, JIM	Long term preservation and archive services, data curation	NSF M&O Core	1.00				1.00
2.3 Computing and Data Manage	2.3.1 Data Storage & Transfer	UW	IT	BRIK, VLADIMIR	Maintain storage system needed for simulation production	NSF M&O Core	0.20				0.20
2.3 Computing and Data Manage	2.3.1 Data Storage & Transfer	UW	CS	MEADE, PATRICK	Operate data handling services	NSF M&O Core	0.25				0.25
2.3 Computing and Data Manage	2.3.1 Data Storage & Transfer	UW	CS	MEADE, PATRICK	Maintain data handling software (JADE): Archive at the S. Pole, transfer, ingest to the Data Warehouse and long-term	NSF M&O Core	0.25				0.25
2.3 Computing and Data Manage	2.3.1 Data Storage & Transfer	UW	CS	MEADE, PATRICK	Operate Data transfer from S. Pole to UW Data Warehouse and archive services at S. Pole	NSF M&O Core	0.50				0.50
2.3 Computing and Data Manage	2.3.1 Data Storage & Transfer	US Total					2.50	0.00	0.00		2.50
2.3 Computing and Data Manage	2.3.1 Data Storage & Transfer	Non-US Total									0.00
2.3 Computing and Data Manage	**2.3.1 Data Storage & Transfer**						2.50	0.00	0.00	0.00	2.50
2.3 Computing and Data Manage	2.3.2 Core Data Center Infrastructure	UW	IT	BARNET, STEVE	Operations and cybersecurity manager	NSF M&O Core	0.70				0.70
2.3 Computing and Data Manage	2.3.2 Core Data Center Infrastructure	UW	IT	BRIK, VLADIMIR	Maintain Core Data Center Infrastructure Systems	NSF M&O Core	0.10				0.10
2.3 Computing and Data Manage	2.3.2 Core Data Center Infrastructure	UW	IT	MAYER, DAVID	IceCube Web Development	NSF M&O Core	0.50				0.50
2.3 Computing and Data Manage	2.3.2 Core Data Center Infrastructure	UW	IT	SHEPERD, ALEC	Maintain and operate Virtual Machines deployment infrastrucutre	NSF M&O Core	0.50				0.50
2.3 Computing and Data Manage	2.3.2 Core Data Center Infrastructure	UW	IT	SHEPERD, ALEC	Maintain Core Data Center Infrastructure Systems	NSF M&O Core	0.25				0.25
2.3 Computing and Data Manage	2.3.2 Core Data Center Infrastructure	US Total					2.05	0.00	0.00		2.05
2.3 Computing and Data Manage	2.3.2 Core Data Center Infrastructure										0.00
2.3 Computing and Data Manage	2.3.2 Core Data Center Infrastructure	Non-US Total								0.00	0.00
2.3 Computing and Data Manage	**2.3.2 Core Data Center Infrastructure**						2.05	0.00	0.00	0.00	2.05
2.3 Computing and Data Manage	2.3.3 Central Computing Resources	LBNL	IT	LBNL IT	NERSC Data Archiving, Distributed Computing and Labor	US In-Kind			1.00		1.00
2.3 Computing and Data Manage	2.3.3 Central Computing Resources	SUBR	KE	TER-ANTONYAN, SAMVEL	Cloud Computing	US In-Kind			0.30		0.30
2.3 Computing and Data Manage	2.3.3 Central Computing Resources	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 Manage	2.3.3 Central Computing Resources	UW	IT	BRIK, VLADIMIR	Maintain High Performance Computing services.	NSF M&O Core	0.10				0.10
2.3 Computing and Data Manage	2.3.3 Central Computing Resources	UW	IT	SHEPERD, ALEC	Maintain Central Computing Infrastructure Systems	NSF M&O Core	0.25				0.25
2.3 Computing and Data Manage	2.3.3 Central Computing Resources	UW	IT	COMERFORD, DENNIS	End-user support for common collaboration services	NSF M&O Core	0.60				0.60
2.3 Computing and Data Manage	2.3.3 Central Computing Resources	US Total					0.95	0.00	1.30		2.25

WBS L2	WBS L3	Institution	Lab or Cat.	Names	Tasks	Source of Funds (U.S. Only)	NSF M&O Core	NSF Base Grants	U.S. Institutional In-Kind	Non-U.S. Institutional In-Kind	Grand Total
2.3 Computing and Data Manage	2.3.3 Central Computing Resources	DESY	IT	DESY IT	European Data Center - Distributed Computing and Labor	Non-US In-kind				1.00	1.00
2.3 Computing and Data Manage	2.3.3 Central Computing Resources	DESY	KE	ACKERMANN, MARKUS	DESY TIER-1 coordination	Non-US In-kind				0.10	0.10
2.3 Computing and Data Manage	2.3.3 Central Computing Resources	DESY	KE	VAN SANTEN, JAKOB	TIER-1 coordination / Simulation Production	Non-US In-kind				0.25	0.25
2.3 Computing and Data Manage	2.3.3 Central Computing Resources	Non-US Total								1.35	1.35
2.3 Computing and Data Manage	**2.3.3 Central Computing Resources**						0.95	0.00	1.30	1.35	3.60
2.3 Computing and Data Manage	2.3.4 Distributed Computing Resources	MSU	KE	KOPPER, CLAUDIO	GPU computing resourses	US In-Kind			0.05		0.05
2.3 Computing and Data Manage	2.3.4 Distributed Computing Resources	MSU	PO	CLARK, BRIAN	IceProd site manager at MSU HPCC	Base Grants		0.10			0.10
2.3 Computing and Data Manage	2.3.4 Distributed Computing Resources	MSU	PO	HALLIDAY, ROBERT	IceProd site manager at MSU HPCC	NSF M&O Core	0.25				0.25
2.3 Computing and Data Manage	2.3.4 Distributed Computing Resources	UW	IT	SCHULTZ, DAVID	Core distributed software maintenance	NSF M&O Core	0.50				0.50
2.3 Computing and Data Manage	2.3.4 Distributed Computing Resources	UW	IT	SCHULTZ, DAVID	Maintain workflow management system	NSF M&O Core	0.40				0.40
2.3 Computing and Data Manage	2.3.4 Distributed Computing Resources	UW	IT	SCHULTZ, DAVID	Manage Production Software Team	NSF M&O Core	0.10				0.10
2.3 Computing and Data Manage	2.3.4 Distributed Computing Resources	UW	IT	BRIK, VLADIMIR	Maintain distributed high-throughput cluster	NSF M&O Core	0.60				0.60
2.3 Computing and Data Manage	2.3.4 Distributed Computing Resources	UW	CS	EVANS, ERIC	Core software maintenance	NSF M&O Core	0.50				0.50
2.3 Computing and Data Manage	2.3.4 Distributed Computing Resources	US Total					2.35	0.10	0.05	0.00	2.50
2.3 Computing and Data Manage	2.3.4 Distributed Computing Resources	ALBERTA	CS	RAJEWSKI, JAMIE	Management of ComputeCanada allocation	Non-US In-kind				0.40	0.40
2.3 Computing and Data Manage	2.3.4 Distributed Computing Resources	CHIBA	PO	LU, LU	Grid Operations Team	Non-US In-kind				0.20	0.20
2.3 Computing and Data Manage	2.3.4 Distributed Computing Resources	RWTH	GR	STETTNER, JÖRAN	OSG Site RWTH	Non-US In-kind				0.05	0.05
2.3 Computing and Data Manage	2.3.4 Distributed Computing Resources	Non-US Total								0.65	0.65
2.3 Computing and Data Manage	**2.3.4 Distributed Computing**						2.35	0.10	0.05	0.65	3.15
2.3 Computing and Data Manag	**WBS L2 Total**						8.75	0.10	1.43	2.15	12.43
2.4 Data Processing & Simulation	2.4.0 Data Processing and Simulation Services	UW	DS	DIAZ-VELEZ, JUAN CARLOS	Coordination of Offline Processing and Simulation Production efforts with analysis working groups	NSF M&O Core	0.25				0.25
2.4 Data Processing & Simulation	2.4.0 Data Processing and Simulation	US Total					0.25	0.00	0.00		0.25
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	DREXEL	GR	SCLAFANI, STEVE	Neutrino Sources Data Curator	US In-Kind			0.20		0.20
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	MSU	KE	KOPPER, CLAUDIO	Cloud-based event reconstruction infrastructure development	US In-Kind			0.10		0.10
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	MSU	PO	NISA, MEHR	Cloud-based event reconstruction infrastructure development	US In-Kind			0.10		0.10
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	OSU	GR	MEDINA, ANDRES	Pass2 Verification	Base Grants		0.05			0.05
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	SBU	GR	ZHANG, ZELONG	Pass2/3 verification	Base Grants		0.10			0.10
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	UW	DS	SNIHUR, ROBERT	Experimental data processing and reduction. Interface with collaboration working groups to deliver analysis-ready data	NSF M&O Core	1.00				1.00
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	UW	GR	LEONARD, KAYLA	Developing for MuonGun for low energies	US In-Kind			0.50		0.50
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	UW	CS	EVANS, ERIC	Data validation tool development	NSF M&O Core	0.10				0.10
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	US Total					1.60	0.15	0.90		2.65
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	NBI	PO	STUTTARD, TOM	OscNext Event Selection	Non-US In-kind				0.20	0.20
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	NBI	GR	BOURBEAU, ETIENNE	OscNext Event Selection	Non-US In-kind				0.65	0.65
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	RWTH	GR	SCHUMACHER, LISA	HE muondata for IC/Auger/TA coinc. Analyses	Non-US In-kind				0.10	0.10
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	RWTH	GR	STETTNER, JÖRAN	Diffuse sample production	Non-US In-kind				0.05	0.05
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	RWTH	GR	STETTNER, JÖRAN	Diffuse-sample for PS analyses	Non-US In-kind				0.05	0.05
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	RWTH	GR	PHILLIPPEN, SASKIA	Moon Sample Processing and Verification	Non-US In-kind				0.10	0.10
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	GENT	GR	VERPOEST, STEF	Cosmic Ray L3 scripts	Non-US In-kind				0.50	0.50
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	GENT	GR	VERPOEST, STEF	Pass2 verification	Non-US In-kind				0.05	0.05
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	TUM	GR	TURCATI, ANDREA	Muon L3 Scripts	Non-US In-kind				0.20	0.20

WBS L2	WBS L3	Institution	Lab or Cat.	Names	Tasks	Source of Funds (U.S. Only)	NSF M&O Core	NSF Base Grants	U.S. Institutional In-Kind	Non-U.S. Institutional In-Kind	Grand Total
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	TUM	GR	NIEDERHAUSEN, HANS	Muon L3 Scripts	Non-US In-kind				0.10	0.10
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	TUM	GR	HUBER, MATTHIAS	Muon L3 Scripts	Non-US In-kind				0.20	0.20
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	TUM	GR	GLAUCH, THEO	Pass-2	Non-US In-kind				0.20	0.20
2.4 Data Processing & Simulation	2.4.1 Offline Data Production	**Non-US Total**								**2.40**	**2.40**
2.4 Data Processing & Simulation	**2.4.1 Offline Data Production**						**1.60**	**0.15**	**0.90**	**2.40**	**5.05**
2.4 Data Processing & Simulation	2.4.2 Simulation Production	UD	PO	SOLDIN, DENNIS	IceCube/IceTop simulation production	NSF M&O Core	0.15				0.15
2.4 Data Processing & Simulation	2.4.2 Simulation Production	UD	GR	REHMAN, ABDUL	Surface radio	Base Grants		0.15			0.15
2.4 Data Processing & Simulation	2.4.2 Simulation Production	UMD	SC	BLAUFUSS, ERIK	Simulation production site manager	Base Grants		0.10			0.10
2.4 Data Processing & Simulation	2.4.2 Simulation Production	UMD	PO	LARSON, MICHAEL	Low Energy tools	Base Grants		0.05			0.05
2.4 Data Processing & Simulation	2.4.2 Simulation Production	UW	SC	DESIATI, PAOLO	Simulation Production streamlining programs for the cloud, GPU	NSF M&O Core	0.30				0.30
2.4 Data Processing & Simulation	2.4.2 Simulation Production	UW	SC	DESIATI, PAOLO	Simulation Production Manager	NSF M&O Core	0.30				0.30
2.4 Data Processing & Simulation	2.4.2 Simulation Production	UW	SC	DESIATI, PAOLO	Simulation Production panel chair	US In-Kind			0.10		0.10
2.4 Data Processing & Simulation	2.4.2 Simulation Production	UW	GR	GRIFFITH, ZACHARY	Gamma simulation production	Base Grants		0.30			0.30
2.4 Data Processing & Simulation	2.4.2 Simulation Production	UW	GR	WILLE, LOGAN	Simulation production for muon decay Glashow resonance events	US In-Kind			0.30		0.30
2.4 Data Processing & Simulation	2.4.2 Simulation Production	UW	DS	DIAZ-VELEZ, JUAN CARLOS	Manage Centralized Simulation Production. Maintain, test and update physics aspects of the atmospheric muon and neutrino simulation	NSF M&O Core	0.40				0.40
2.4 Data Processing & Simulation	2.4.2 Simulation Production	UW	CS	EVANS, ERIC	Simulation production monitoring and validation	NSF M&O Core	0.40				0.40
2.4 Data Processing & Simulation	2.4.2 Simulation Production	**US Total**					**1.55**	**0.60**	**0.40**		**2.55**
2.4 Data Processing & Simulation	2.4.2 Simulation Production	ALBERTA	PO	HIGHNIGHT, JOSHUA	Production of GENIE signal simulation for low-energy analyses	Non-US In-kind				0.25	0.25
2.4 Data Processing & Simulation	2.4.2 Simulation Production	ALBERTA	PO	HIGHNIGHT, JOSHUA	GENIE-icetray maintainer	Non-US In-kind				0.05	0.05
2.4 Data Processing & Simulation	2.4.2 Simulation Production	ALBERTA	GR	SARKAR, SOURAV	PYTHIA event generator implementation and maintenance	Non-US In-kind				0.15	0.15
2.4 Data Processing & Simulation	2.4.2 Simulation Production	CHIBA	PO	LU, LU	special background simulation production (Corsika)	Non-US In-kind				0.20	0.20
2.4 Data Processing & Simulation	2.4.2 Simulation Production	CHIBA	PO	MEIER, MAXIMILIAN	High energy Corsika simulation production with Sibyll 3.2 and EPOS	Non-US In-kind				0.20	0.20
2.4 Data Processing & Simulation	2.4.2 Simulation Production	DTMND	GR	WERTHEBACH, JOHANNES	Simulation production site manager at Dortmund	Non-US In-kind				0.50	0.30
2.4 Data Processing & Simulation	2.4.2 Simulation Production	KIT	SC	KANG, DONGHWA	Surface simulations	Non-US In-kind				0.15	0.15
2.4 Data Processing & Simulation	2.4.2 Simulation Production	KIT	PO	LESCZCYNSKA, AGNIESZKA	Validation and Monitoring data sets	Non-US In-kind				0.20	0.20
2.4 Data Processing & Simulation	2.4.2 Simulation Production	RWTH	GR	STETTNER, JÖRAN	Simulation production for consistent MC spanning IC-79-IC-86-5 (relevant after	Non-US In-kind				0.20	0.20
2.4 Data Processing & Simulation	2.4.2 Simulation Production	RWTH	GR	GANSTER, ERIK	MC Production for global diffuse fit	Non-US In-kind				0.20	0.20
2.4 Data Processing & Simulation	2.4.2 Simulation Production	TUM	GR	MEIGHEN-BERGER, STEPHAN	Development of MCEq	Non-US In-kind				0.30	0.30
2.4 Data Processing & Simulation	2.4.2 Simulation Production	**Non-US Total**								**2.40**	**2.40**
2.4 Data Processing & Simulation	**2.4.2 Simulation Production**						**1.55**	**0.60**	**0.40**	**2.40**	**4.95**
2.4 Data Processing & Simulation	2.4.3 Public Data Products	UA	KE	WILLIAMS, DAWN	Convenor of Data release task force	NSF M&O Core	0.05				0.05
2.4 Data Processing & Simulation	2.4.3 Public Data Products	MIT	GR	DIAZ, ALEJANDRO	Organize and maintain BSM public data release page	US In-Kind			0.10		0.10
2.4 Data Processing & Simulation	2.4.3 Public Data Products	PSU	PO	ELLER, PHILIPP	DRAGON/GRECO data release	Base Grants		0.05			0.05
2.4 Data Processing & Simulation	2.4.3 Public Data Products	**US Total**					**0.05**	**0.05**	**0.10**		**0.20**
2.4 Data Processing & Simulation	2.4.3 Public Data Products	RWTH	GR	STETTNER, JÖRAN	Millipede scans for HE muondata for IC/Auger/TA coinc. Analyses					0.05	0.05
2.4 Data Processing & Simulation	2.4.3 Public Data Products	ULB	PO	BAUR, SEBASTIAN	Validation of data release Upgrade					0.25	0.25
2.4 Data Processing & Simulation	2.4.3 Public Data Products	VUB	KE	VAN EIJNDHOVEN, NICK	Public data release					0.10	0.10
2.4 Data Processing & Simulation	2.4.3 Public Data Products	**Non-US Total**								**0.40**	**0.40**
2.4 Data Processing & Simulation	**2.4.3 Public Data Products**						**0.05**	**0.05**	**0.10**	**0.40**	**0.60**
2.4 Data Processing & Simulation	**WBS L2 Total**						**3.20**	**0.80**	**1.40**	**5.20**	**10.60**
2.5 Software	2.5.0 Software										0.00
2.5 Software	**2.5.0 Software**						**0.00**	**0.00**	**0.00**		**0.00**

WBS L2	WBS L3	Institution	Lab or Cat.	Names	Tasks	Source of Funds (U.S. Only)	NSF M&O Core	NSF Base Grants	U.S. Institutional In-Kind	Non-U.S. Institutional In-Kind	Grand Total
2.5 Software	2.5.1 Core Software	MIT	GR	MOULAI, MARJON	Atmospheric fluxes library from MCEq with uncertainties	US In-Kind			0.20		0.20
2.5 Software	2.5.1 Core Software	MSU	KE	KOPPER, CLAUDIO	Icetray framework maintenance	US In-Kind			0.05		0.05
2.5 Software	2.5.1 Core Software	MSU	KE	WHITEHORN, NATHAN	Icetray framework maintenance	US In-Kind			0.05		0.05
2.5 Software	2.5.1 Core Software	MSU	GR	MICALLEF, JESSIE	Software strike team / CLSim development and maintenance	Base Grants		0.20			0.20
2.5 Software	2.5.1 Core Software	OSU	GR	MEDINA, ANDRES	Software strike team	US In-Kind			0.25		0.25
2.5 Software	2.5.1 Core Software	UD	PO	COLEMAN, ALAN	Software strike team	US In-Kind			0.10		0.10
2.5 Software	2.5.1 Core Software	UD	GR	REHMAN, ABDUL	Visualization software (Steamshovel)	Base Grants		0.15			0.15
2.5 Software	2.5.1 Core Software	UMD	SC	BLAUFUSS, ERIK	Support Core Software	NSF M&O Core	0.10				0.10
2.5 Software	2.5.1 Core Software	UMD	PO	OLIVAS, ALEX	Support Core Software	US In-Kind			0.05		0.05
2.5 Software	2.5.1 Core Software	UMD	PO	OLIVAS, ALEX	SW Coordinator – Core Software	NSF M&O Core	0.20				0.20
2.5 Software	2.5.1 Core Software	UMD	CS	UMD CS	Maintain Core Software Repository	NSF M&O Core	0.00				0.00
2.5 Software	2.5.1 Core Software	**US Total**					**0.30**	**0.35**	**0.70**		**1.35**
2.5 Software	2.5.1 Core Software	ALBERTA	CS	RAJEWSKI, JAMIE	Updating and maintaining compatibility of tools	Non-US In-kind				0.10	0.10
2.5 Software	2.5.1 Core Software	MAINZ	GR	EHRHARD, THOMAS	SimProd setup and PISA	Non-US In-kind				0.25	0.25
2.5 Software	2.5.1 Core Software	SU	GR	JANSSON, MATTI	Software strike team	Non-US In-kind				0.20	0.20
2.5 Software	2.5.1 Core Software	TUM	PO	KRINGS, KAI	Software strike team	Non-US In-kind				0.20	0.20
2.5 Software	2.5.1 Core Software	TUM	PO	WOLF, MARTIN	Neutrino Source Technical Coordinator	Non-US In-kind				0.20	0.20
2.5 Software	2.5.1 Core Software	MAINZ	GR	WELDERT, JAN	PISA	Non-US In-kind				0.20	0.20
2.5 Software	2.5.1 Core Software	TUM	GR	KARL, MARTINA	Software strike team	Non-US In-kind				0.20	0.20
2.5 Software	2.5.1 Core Software	**Non-US Total**								**1.35**	**1.35**
2.5 Software	**2.5.1 Core Software**						**0.30**	**0.35**	**0.70**	**1.35**	**2.70**
2.5 Software	2.5.2 Simulation Software	UD	PO	COLEMAN, ALAN	Simulation of surface enhancements	US In-Kind			0.20		0.20
2.5 Software	2.5.2 Simulation Software	UD	GR	PAUDEL, EK NARAYAN	Surface radio	US In-Kind			0.10		0.10
2.5 Software	2.5.2 Simulation Software	MIT	PO	VANNEROM, DAVID	Development of GolemFit	US In-Kind			0.10		0.10
2.5 Software	2.5.2 Simulation Software	MIT	PO	VANNEROM, DAVID	Extension of LeptonInjector to include Beyond Standard Model particles	US In-Kind			0.30		0.30
2.5 Software	2.5.2 Simulation Software	MIT	GR	WEIGEL, PHILIP	Development of GolemFit	US In-Kind			0.10		0.10
2.5 Software	2.5.2 Simulation Software	MIT	GR	DIAZ, ALEJANDRO	Development of GolemFit	US In-Kind			0.10		0.10
2.5 Software	2.5.2 Simulation Software	MSU	KE	KOPPER, CLAUDIO	Maintenance of clsim direct photon propagation tool	US In-Kind			0.10		0.10
2.5 Software	2.5.2 Simulation Software	MSU	KE	MAHN, KENDALL	Integration/development of GENIE for low energy systematics	US In-Kind			0.05		0.05
2.5 Software	2.5.2 Simulation Software	MSU	GR	HARNISCH, ALEXANDER	Implementation of BFRv1 ice model in clsim	US In-Kind			0.20		0.20
2.5 Software	2.5.2 Simulation Software	ROCHESTER	GR	GRISWOLD, SPENCER	Supernova and transient simulations	US In-Kind			0.10		0.10
2.5 Software	2.5.2 Simulation Software	SUBR	KE	FAZELY, ALI	GEANT Simulation, Supernova Data	US In-Kind			0.15		0.15
2.5 Software	2.5.2 Simulation Software	SUBR	SC	XIANWU, XU	Simulation Programs	US In-Kind			0.15		0.15
2.5 Software	2.5.2 Simulation Software	UTA	KE	JONES, BENJAMIN	GolemFit and nuSQuiDS contributions	US In-Kind			0.05		0.05
2.5 Software	2.5.2 Simulation Software	UTA	GR	PARKER, GRANT	Development, testing and maintenance of GolemFit code	US In-Kind			0.10		0.10
2.5 Software	2.5.2 Simulation Software	UTA	GR	SMITHERS, BENJAMIN	SnowSuite systematics framework for IceCube analyses, including implementation in official production	US In-Kind			0.50		0.50
2.5 Software	2.5.2 Simulation Software	UW	SC	CHIRKIN, DMITRY	Maintain and Verify Simulation of Photon Propagation and update Ice Properties	NSF M&O Core	0.30				0.30
2.5 Software	2.5.2 Simulation Software	UW	SC	HOSHINA, KOTOYO	nugen maintenance	NSF M&O Core	0.25				0.25
2.5 Software	2.5.2 Simulation Software	UW	GR	SILVA, MANUEL	Muongun maintenance, upgrade	NSF M&O Core	0.25				0.25
2.5 Software	2.5.2 Simulation Software	UW	DS	DIAZ-VELEZ, JUAN CARLOS	Simulation software programs coordinator	NSF M&O Core	0.25				0.25

WBS L2	WBS L3	Institution	Lab or Cat.	Names	Tasks	Source of Funds (U.S. Only)	NSF M&O Core	NSF Base Grants	U.S. Institutional In-Kind	Non-U.S. Institutional In-Kind	Grand Total
2.5 Software	2.5.2 Simulation Software	UW	DS	MEAGHER, KEVIN	Triggered CORSIKA maintenance and development	NSF M&O Core	0.75				0.75
2.5 Software	2.5.2 Simulation Software	**US Total**					**1.80**	**0.00**	**2.30**		**4.10**
2.5 Software	2.5.2 Simulation Software	BOCHUM	KE	TJUS, JULIA	Development PROPOSAL simulation software	Non-US In-kind				0.10	0.10
2.5 Software	2.5.2 Simulation Software	DESY	KE	VAN SANTEN, JAKOB	Software package maintenance	Non-US In-kind				0.10	0.10
2.5 Software	2.5.2 Simulation Software	DTMND	GR	ALAMEDDINE, JEAN-MARCO	PROPOSAL-IceProd Integration and optimization	Non-US In-kind				0.30	0.30
2.5 Software	2.5.2 Simulation Software	DTMND	GR	SOEDINGREKSO, JAN	PROPOSAL-IceProd Integration and optimization	Non-US In-kind				0.50	0.50
2.5 Software	2.5.2 Simulation Software	GENT	GR	VERPOEST, STEF	Investigations of thinning in simulation	Non-US In-kind				0.05	0.05
2.5 Software	2.5.2 Simulation Software	ERLANGEN	PO	GLÜSENKAMP, THORSTEN	Track/Cascade reconstruction and simulation	Non-US In-kind				0.20	0.20
2.5 Software	2.5.2 Simulation Software	ERLANGEN	GR	KITTLER, THOMAS	Simulation verification, reconstruction development	Non-US In-kind				0.20	0.20
2.5 Software	2.5.2 Simulation Software	ERLANGEN	GR	WREDE, GERRIT	Novel reconstruction algorithms	Non-US In-kind				0.20	0.20
2.5 Software	2.5.2 Simulation Software	KIT	SC	WEINDL	Software surface	Non-US In-kind				0.15	0.15
2.5 Software	2.5.2 Simulation Software	RWTH	GR	BOETTCHER, JAKOB	Monopole Noise Simulation Tool	Non-US In-kind				0.20	0.20
2.5 Software	2.5.2 Simulation Software	RWTH	GR	SCHAUFEL, MERLIN	IceAct/IceCube/IceTop MonteCarlo	Non-US In-kind				0.10	0.10
2.5 Software	2.5.2 Simulation Software	RWTH	GR	GANSTER, ERIK	Snowstorm MC	Non-US In-kind				0.20	0.20
2.5 Software	2.5.2 Simulation Software	QUEEN'S	KE	CLARK, KENNETH	Low Energy Simulation Software updates	Non-US In-kind				0.10	0.10
2.5 Software	2.5.2 Simulation Software	**Non-US Total**								**2.40**	**2.40**
2.5 Software	**2.5.2 Simulation Software**						**1.80**	**0.00**	**2.30**	**2.40**	**6.50**
2.5 Software	2.5.3 Reconstruction	UA	KE	SANTANDER, MARCOS	Reconstruction validation - PSF studies	US In-Kind			0.05		0.05
2.5 Software	2.5.3 Reconstruction	UAA	KE	RAWLINS, KATHERINE	Snow correction for IceTop	US In-Kind			0.20		0.20
2.5 Software	2.5.3 Reconstruction	GTECH	GR	CHEN, CHUJIE	Maintainer of Cramer-Rao	Base Grants		0.10			0.10
2.5 Software	2.5.3 Reconstruction	LBNL	GR	LYU, YANG	Starting event energy, muon bundles	US In-Kind			0.10		0.10
2.5 Software	2.5.3 Reconstruction	MERCER	KE	MCNALLY, FRANK	IceTop energy reconstruction with CNNs	US In-Kind			0.10		0.10
2.5 Software	2.5.3 Reconstruction	MSU	PO	LUDWIG, ANDREW	Likelihood-based muon reconstruction development	US In-Kind			0.50		0.50
2.5 Software	2.5.3 Reconstruction	MSU	GR	NOWICKI, SARAH	DirectReco software support	US In-Kind			0.10		0.10
2.5 Software	2.5.3 Reconstruction	PSU	PO	ELLER, PHILIPP	PISA Maintenance	Base Grants		0.10			0.10
2.5 Software	2.5.3 Reconstruction	SBU	GR	ZHANG, ZELONG	Reconstruction tau, cascades	Base Grants		0.10			0.10
2.5 Software	2.5.3 Reconstruction	SUBR	KE	FAZELY, ALI	Reconstruction/ Analysis tools, data analysis, Cloud Computation; High Energy Neutrino Nucleon Cross Section Measurement and Simulation	US In-Kind			0.15		0.15
2.5 Software	2.5.3 Reconstruction	SUBR	SC	XIANWU, XU	Reconstruction/ Analysis tools	US In-Kind			0.15		0.15
2.5 Software	2.5.3 Reconstruction	UD	PO	SOLDIN, DENNIS	IceTop reco, Corsika reader	Base Grants		0.15			0.15
2.5 Software	2.5.3 Reconstruction	UMD	PO	LARSON, MICHAEL	Neutrinos source WG technical lead software/likelihood	Base Grants		0.20			0.20
2.5 Software	2.5.3 Reconstruction	UMD	PO	OLIVAS, ALEX	SW Coordinator – Data Quality, Reconstruction and Sim. Programs	NSF M&O Core	0.25				0.25
2.5 Software	2.5.3 Reconstruction	PSU	GR	LANFRANCHI, JUSTIN	Low energy event reconstruction quality; PISA maintenance	US In-Kind			0.15		0.15
2.5 Software	2.5.3 Reconstruction	PSU	GR	DELAUNAY, JIMMY	Low energy neutrino pointing resolution	US In-Kind			0.20		0.20
2.5 Software	2.5.3 Reconstruction	SDSMT	KE	XINHUA, BAI	Study of high energy cosmic rays, fluctuations	US In-Kind			0.58		0.58
2.5 Software	2.5.3 Reconstruction	SDSMT	GR	LEON SILVERIO, DIANA	Update and improve the IceTop-InIce combined reconstruction, study of fluctuations	US In-Kind			0.90		0.90
2.5 Software	2.5.3 Reconstruction	UW	SC	CHIRKIN, DMITRY	Reconstruction software	NSF M&O Core	0.15				0.15
2.5 Software	2.5.3 Reconstruction	UW	GR	GRIFFITH, ZACHARY	Photon/hadron separation	Base Grants		0.20			0.20

WBS L2	WBS L3	Institution	Lab or Cat.	Names	Tasks	Source of Funds (U.S. Only)	NSF M&O Core	NSF Base Grants	U.S. Institutional In-Kind	Non-U.S. Institutional In-Kind	Grand Total
2.5 Software	2.5.3 Reconstruction	UW	GR	SCHNEIDER, AUSTIN	Event reconstruction, software development	Base Grants		0.15			0.15
2.5 Software	2.5.3 Reconstruction	UW	GR	PIZZUTO, ALEX	Fast response analysis maintenance, SkyLab transients	US In-Kind			0.20		0.20
2.5 Software	2.5.3 Reconstruction	UW	PO	YUAN, TIANLU	Impact of DOM response on reconstruction, cascade reconstruction at high energies	Base Grants		0.40			0.40
2.5 Software	2.5.3 Reconstruction	UW	DS	MEAGHER, KEVIN	Reconstruction software programs	NSF M&O Core	0.25				0.25
2.5 Software	2.5.3 Reconstruction	UWRF	KE	SEUNARINE, SURUJ	Low-Energy Extensions of IceTop	US In-Kind			0.10		0.10
2.5 Software	2.5.3 Reconstruction	Yale	KE	MARUYAMA, REINA	Coincident events between IceCube and DM-Ice, low energy reconstruction	US In-Kind			0.05		0.05
2.5 Software	2.5.3 Reconstruction	**US Total**					**0.65**	**1.40**	**3.53**		**5.58**
2.5 Software	2.5.3 Reconstruction	ADELAIDE	KE	HILL, GARY	Event energy and direction reconstruction, millipede	Non-US In-kind				0.40	0.40
2.5 Software	2.5.3 Reconstruction	ALBERTA	PO	HIGNIGHT, JOSHUA	Level-3 processing maintainer for the LE group	Non-US In-kind				0.05	0.05
2.5 Software	2.5.3 Reconstruction	CHIBA	KE	YOSHIDA, SHIGERU	Maintain Romeo, EHE Simulations, Calibration using Standard Candles	Non-US In-kind				0.20	0.20
2.5 Software	2.5.3 Reconstruction	CHIBA	KE	YOSHIDA, SHIGERU	EHE online pipeline for follow-up observations	Non-US In-kind				0.15	0.15
2.5 Software	2.5.3 Reconstruction	CHIBA	KE	ISHIHARA, AYA	Maintain Portia and the SC data filtering	Non-US In-kind				0.15	0.15
2.5 Software	2.5.3 Reconstruction	DESY	GR	LAGUNAS GUALDA, CHRISTINA	Millipede systematic uncertainties	Non-US In-kind				0.10	0.10
2.5 Software	2.5.3 Reconstruction	DPNC	PO	BRON, STEPHANIE	Paper on flare search	Non-US In-kind				0.10	0.10
2.5 Software	2.5.3 Reconstruction	DPNC	GR	LUCARELLI FRANCESCO	Time dependent flare search online filter quality and monthly data	Non-US In-kind				0.70	0.70
2.5 Software	2.5.3 Reconstruction	DPNC	GR	ALISPACH, CYRIL	Verification on 10 yr PS sample and analysis on UHECRs	Non-US In-kind				0.30	0.30
2.5 Software	2.5.3 Reconstruction	MAINZ	GR	LOHFINK, ELISA	Low energy reconstruction	Non-US In-kind				0.40	0.40
2.5 Software	2.5.3 Reconstruction	UC	PO	AARTSEN, MARK	Code maintenance (CLast)	Non-US In-kind				0.05	0.05
2.5 Software	2.5.3 Reconstruction	UC	PO	AARTSEN, MARK	Cascade Spline Table tests (ongoing)	Non-US In-kind				0.10	0.10
2.5 Software	2.5.3 Reconstruction	SU	GR	DEOSKAR, KUNAL	Event reconstruction, angular resolution	Non-US In-kind				0.20	0.20
2.5 Software	2.5.3 Reconstruction	TUM	PO	KRINGS, KAI	Maintenance Gulliver tool	Non-US In-kind				0.10	0.10
2.5 Software	2.5.3 Reconstruction	VUB	KE	VAN EIJNDHOVEN, NICK	IcePack analysis software tools	Non-US In-kind				0.25	0.25
2.5 Software	2.5.3 Reconstruction	VUB	GR	COPPIN, PAUL	Maintenance of GRBWEB	Non-US In-kind				0.10	0.10
2.5 Software	2.5.3 Reconstruction	**Non-US Total**								**3.35**	**3.35**
2.5 Software	**2.5.3 Reconstruction**						**0.65**	**1.40**	**3.53**	**3.35**	**8.93**
2.5 Software	2.5.4 Science Support Tools	HARVARD	KE	ARGUELLES, CARLOS	GolemFit framework development coordination	US In-Kind			0.10		0.10
2.5 Software	2.5.4 Science Support Tools	HARVARD	GR	SKRZYPEK, BARBARA	Maintenance and development of LeptonInjector	US In-Kind			0.10		0.10
2.5 Software	2.5.4 Science Support Tools	HARVARD	GR	SKRZYPEK, BARBARA	GolemFit framework development	US In-Kind			0.10		0.10
2.5 Software	2.5.4 Science Support Tools	UA	KE	SANTANDER, MARCOS	Public alerts summary web page	US In-Kind			0.05		0.05
2.5 Software	2.5.4 Science Support Tools	**US Total**					**0.00**	**0.00**	**0.35**		**0.35**
2.5 Software	2.5.4 Science Support Tools	RWTH	GR	SCHUMACHER, LISA	Skylab maintenance	Non-US In-kind				0.05	0.05
2.5 Software	2.5.4 Science Support Tools	RWTH	GR	STETTNER, JÖRAN	NNMFIT tool for diffuse profile likelihood fits	Non-US In-kind				0.05	0.05
2.5 Software	2.5.4 Science Support Tools	RWTH	GR	GANSTER, ERIK	NNMFIT tool for diffuse profile likelihood fits	Non-US In-kind				0.05	0.05
2.5 Software	2.5.4 Science Support Tools	Münster	GR	BUSSE, RAFFAELA	Extension of NuFlux tool	Non-US In-kind				0.50	0.50
2.5 Software	2.5.4 Science Support Tools	TUM	PO	WOLF, MARTIN	Maintenance SkyLab, Development SkyLLH	Non-US In-kind				0.20	0.20
2.5 Software	2.5.4 Science Support Tools	TUM	GR	NIEDERHAUSEN, HANS	Maintenance SkyLab, Development SkyLLH	Non-US In-kind				0.20	0.20
2.5 Software	2.5.4 Science Support Tools	**Non-US Total**								**1.05**	**1.05**
2.5 Software	**2.5.4 Science Support Tools**						**0.00**	**0.00**	**0.35**	**1.05**	**1.40**

WBS L2	WBS L3	Institution	Lab or Cat.	Names	Tasks	Source of Funds (U.S. Only)	NSF M&O Core	NSF Base Grants	U.S. Institutional In-Kind	Non-U.S. Institutional In-Kind	Grand Total
2.5 Software	2.5.5 Software Development Infrastructure	UMD	CS	LADIEU, DON	Maintenance of DevOps systems, e.g. build, test coverage, CI/CD, VCS, and workflow policy	NSF M&O Core	0.75				0.75
2.5 Software	2.5.5 Software Development Infrastructure	**US Total**					**0.75**	**0.00**	**0.00**		**0.75**
2.5 Software	2.5.5 Software Development Infrastructure										0.00
2.5 Software	2.5.5 Software Development Infrastructure	**Non-US Total**								**0.00**	**0.00**
2.5 Software	**2.5.5 Software Development Infrastructure**						0.75	0.00	0.00	0.00	0.75
2.5 Software	**WBS L2 Total**						**3.50**	**1.75**	**6.88**	**8.15**	**20.28**
2.6 Calibration	2.6.1 Detector Calibration	UA	KE	WILLIAMS, DAWN	Baseline and charge harvesting and DOMCal	NSF M&O Core	0.10				0.10
2.6 Calibration	2.6.1 Detector Calibration	KU	KE	BESSON, DAVE	Development of four radio-frequency pulsers for IceCube upgrade	US In-Kind				0.30	0.30
2.6 Calibration	2.6.1 Detector Calibration	KU	GR	MADISON, BRENDON	Development of four radio-frequency pulsers for IceCube upgrade	US In-Kind				0.15	0.15
2.6 Calibration	2.6.1 Detector Calibration	KU	GR	MAGNUSON, MITCH	Development of four radio-frequency pulsers for IceCube upgrade	US In-Kind				0.15	0.15
2.6 Calibration	2.6.1 Detector Calibration	MSU	PO	NISA, MEHR	In-situ DOM sensitivity / angular response calibration from muon neutrinos	US In-Kind				0.10	0.10
2.6 Calibration	2.6.1 Detector Calibration	MSU	GR	LE, HIEU	In-situ DOM sensitivity / angular response calibration from muon neutrinos	US In-Kind				0.10	0.10
2.6 Calibration	2.6.1 Detector Calibration	UW	SC	WENDT, CHRISTOPHER	Flasher output, flasher calibration	NSF M&O Core	0.40				0.40
2.6 Calibration	2.6.1 Detector Calibration	UW	SC	WENDT, CHRISTOPHER	DOM charge response, linearity, DOM calibration support	NSF M&O Core	0.40				0.40
2.6 Calibration	2.6.1 Detector Calibration	UW	SC	TOSI, DELIA	Absolute DOM sensitivity calibration (laboratory measurements)	NSF M&O Core	0.15				0.15
2.6 Calibration	2.6.1 Detector Calibration	UW	GR	TY, BUNHENG	PMT negative HV studies	US In-Kind			0.05		0.05
2.6 Calibration	2.6.1 Detector Calibration	UW	GR	LUSZCZAK, WILLIAM	Calibration, 2D-DOM response, anisotropy with muons	Base Grants		0.30			0.30
2.6 Calibration	2.6.1 Detector Calibration	UW	GR	SAFA, IBRAHIM	IceTop maintenance, Scintillator project	US In-Kind			0.20		0.20
2.6 Calibration	2.6.1 Detector Calibration	UWRF	KE	SEUNARINE, SURUJ	Calibration-Flasher Studies	US In-Kind			0.10		0.10
2.6 Calibration	2.6.1 Detector Calibration	**US Total**					**1.05**	**0.30**	**1.15**		**2.50**
2.6 Calibration	2.6.1 Detector Calibration	ALBERTA	KE	MOORE, ROGER	DOM efficiency with cosmic muons	Non-US In-kind				0.10	0.10
2.6 Calibration	2.6.1 Detector Calibration	ALBERTA	GR	GILLCRIST, DAVID	DOM efficiency with cosmic muons	Non-US In-kind				0.50	0.50
2.6 Calibration	2.6.1 Detector Calibration	UC	GR	RAISSI, AMIR	Flasher Data Testing (learning)	Non-US In-kind				0.15	0.15
2.6 Calibration	2.6.1 Detector Calibration	HUMBOLDT	GR	HEBECKER, DUSTIN	Optical detector calibration	Non-US In-kind				0.20	0.20
2.6 Calibration	2.6.1 Detector Calibration	SKKU	GR	JEONG, MINJIN	Online filter devel-opment & testing (Full Sky Starting Filter)	Non-US In-kind				0.20	0.20
2.6 Calibration	2.6.1 Detector Calibration	SKKU	GR	JEONG, MINJIN	Dark Matter Flux Module - Add and maintain Dark Matter Decay	Non-US In-kind				0.10	0.10
2.6 Calibration	2.6.1 Detector Calibration	SU	GR	JANSSON, MATTI	Geometry studies	Non-US In-kind				0.20	0.20
2.6 Calibration	2.6.1 Detector Calibration	RWTH	GR	SCHAUFEL, MERLIN	IceTop & IceCube Calibration with IceAct	Non-US In-kind				0.10	0.10
2.6 Calibration	2.6.1 Detector Calibration	RWTH	GR	PHILLIPPEN, SASKIA	Geometry Calibration	Non-US In-kind				0.10	0.10
2.6 Calibration	2.6.1 Detector Calibration	UU	KE	HALLGREN, ALLAN	Calibration WG co-chair	Non-US In-kind				0.15	0.15
2.6 Calibration	2.6.1 Detector Calibration	**Non-US Total**								**1.80**	**1.80**
2.6 Calibration	**2.6.1 Detector Calibration**						1.05	0.30	1.15	1.80	4.30
2.6 Calibration	2.6.2 Ice Properties	UA	KE	WILLIAMS, DAWN	Supporting flasher runs and flasher analysis	US In-Kind			0.10		0.10
2.6 Calibration	2.6.2 Ice Properties	UD	KE	SECKEL, DAVID	Ice model, DOM noise	US In-Kind			0.05		0.05
2.6 Calibration	2.6.2 Ice Properties	UTA	KE	JONES, BENJAMIN	Ice model uncertainty estimation using multisim MC method	US In-Kind			0.10		0.10
2.6 Calibration	2.6.2 Ice Properties	UTA	GR	PARKER, GRANT	Negative modes in SnowStorm systematics framework	US In-Kind			0.50		0.50
2.6 Calibration	2.6.2 Ice Properties	UTA	GR	SMITHERS, BENJAMIN	SnowStorm extension to systematics including hole ice, anisotropy, etc.	US In-Kind			0.50		0.50

IceCube M&O Staffing Matrix sort by WBS v28.0 2020.06

WBS L2	WBS L3	Institution	Lab or Cat.	Names	Tasks	Source of Funds (U.S. Only)	NSF M&O Core	NSF Base Grants	U.S. Institutional In-Kind	Non-U.S. Institutional In-Kind	Grand Total
2.6 Calibration	2.6.2 Ice Properties	UW	SC	CHIRKIN, DMITRY	Direct photon tracking / ice- properties calibration , Individual DOM hole ice calibration	Base Grants		0.55			0.55
2.6 Calibration	2.6.2 Ice Properties	UW		NUCKLES, JACK	Pencil beam, LED flasher support	NSF M&O Core	1.00				1.00
2.6 Calibration	2.6.2 Ice Properties	UWRF	KE	SEUNARINE, SURUJ	Calibration-Flasher Studies	US In-Kind			0.10		0.10
2.6 Calibration	2.6.2 Ice Properties	**US Total**					**1.00**	**0.55**	**1.35**		**2.90**
2.5 Software	2.6.2 Ice Properties	SKKU	PO	TOENNIS, CHRISTOPH	Anisotropy Meas-urement with Spice hole camera	Non-US In-kind				0.20	0.20
2.5 Software	2.6.2 Ice Properties	SKKU	PO	TOENNIS, CHRISTOPH	Dark Matter Flux Module - Add and maintain secluded DM	Non-US In-kind				0.10	0.10
2.5 Software	2.6.2 Ice Properties	SKKU	GR	KANG, WOOSIK	Photon tracking / ice-properties calibration	Non-US In-kind				0.20	0.20
2.5 Software	2.6.2 Ice Properties	TUM	GR	HENNINGSEN, FELIX	Simulation / Calibration	Non-US In-kind				0.10	0.10
2.5 Software	2.6.2 Ice Properties	TUM	GR	HOLZAPFEL, KILIAN	Simulation / Calibration/ IceCube Upgrade	Non-US In-kind				0.10	0.10
2.5 Software	2.6.2 Ice Properties	WUPPERTAL	GR	HOFFMANN, RUTH	Acoustic and radio ice properties	Non-US In-kind				0.20	0.20
2.6 Calibration	2.6.2 Ice Properties	**Non-US Total**								**0.90**	**0.90**
2.6 Calibration	**2.6.2 Ice Properties**						**1.00**	**0.55**	**1.35**	**0.90**	**3.80**
2.6 Calibration	**WBS L2 Total**						**2.05**	**0.85**	**2.50**	**2.70**	**8.10**
Grand Total							**38.24**	**6.62**	**20.75**	**33.96**	**99.57**

Changes since last official version are colored red