IceCube Institutional Memorandum Of Understanding (MOU)
Scope of Work

South Dakota School of Mines and Technology
Xinhua Bai
Ph.D. Scientists (Faculty   Scientist/Post Doc   Grads):   **1** (1 0 1)

Labor Cat.	Names	WBS Level 3	Tasks	WBS 2.1 Program Management	WBS 2.2 Detector Maintenance & Operations	WBS 2.3 Computing & Data Management	WBS 2.4 Triggering & Filtering	WBS 2.5 Data Quality, Reconstruction & Simulation Tools	Grand Total
KE	Xinhua Bai	2.1.4 Education & Outreach	Education & Outreach	0.04					0.04
		2.2.7 Monitoring	Monitoring shift		0.02				0.02
		2.5.1 Simulation Programs	Muon yield in EeV showers & comparison with theoretical calculations					0.14	0.14
	Xinhua Bai Total			**0.04**	**0.02**			**0.14**	**0.20**
GR	Emily Dvorak	2.5.1 Simulation Programs	Atmospheric muon and neutrino simulation for cosmic ray and neutrino studies					0.25	0.25
	Emily Dvorak Total							**0.25**	**0.25**
South Dakota School of Mines & Technology Total				**0.04**	**0.02**	**0.00**	**0.00**	**0.39**	**0.45**

Faculty:

Xinhua Bai – institution lead, education & outreach, mentoring Ph.D. student, high-energy muon and muon bundle simulation and physics

Scientists and Post Docs:

TBD [*New hiring after the pending proposal (No. 1404384) is funded by NSF*] – physics events filtering and Monte Carlo production for prompt muon analysis, systematics in prompt muon analysis, R&D of prompt muon analysis tools and physics analysis.

Grad Students:

Emily Dvorak (Ph.D. student, 50% supported by South Dakota Ph.D. program in physics) – production and analysis of atmospheric muons/muon bundles/neutrinos, seasonal modulation, and comparison among different interaction models; improving the truncated dE/dX muon energy reconstruction method

Note: The time of the new Ph.D. student on the project will increase as the student finishes more course work.