IceCube
South Pole Neutrino Observatory

Evidence for Astrophysical Muon Neutrinos from the Northern Sky with IceCube

Results from the IceCube Neutrino Observatory have recently provided compelling evidence for the existence of a high energy astrophysical neutrino flux utilizing a dominantly Southern Hemisphere data set. This study which looked for neutrinos coming from the Northern Hemisphere, is the first independent confirmation of this discovery.

More than 35,000 neutrinos were found in data recorded between May 2010 and May 2012. At the highest energy, above 100 TeV, the measured rate cannot be explained by neutrinos produced in the Earth's atmosphere, indicating the astrophysical nature of high-energy neutrinos. The analysis presented in this paper suggests that more than half of the 21 neutrinos above 100 TeV are of cosmic origin.

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icecube.wisc.edu/news/view/348

IceCube Event ID	Right Ascension, degrees	Declination, degrees	Modified Julian Day, days	Energy Proxy, arbitrary units	Most probable muon energy for best-fit, TeV	Most probable neutrino energy for best-fit, TeV	Signal Probability for best-fit
116357,6324295	254	16.3	55421.5	289916	755	1693	0.96
116807,9493609	88.5	0.2	55497.3	199981	604	880	0.83
119136,66932419	37.1	18.6	55911.3	157871	397	713	0.88
116883,17395151	285.7	3.1	55513.6	147002	422	709	0.8
116701,6581938	331	11	55478.4	140113	317	466	0.81
116026,44241207	346.8	24	55355.5	139728	339	442	0.86
116574,20123342	267.5	13.8	55464.9	131950	302	400	0.82
119739,41603205	238.3	18.9	55987.8	130382	326	394	0.85
118210,47538807	235.2	19.3	55702.8	106898	252	393	0.77
118719,53077538	277.5	52.7	55829.3	91292	156	198	0.66
116269,59516168	323.3	2.8	55405.5	66558	134	193	0.41
116876,63208734	110.5	0	55512.6	64650	147	206	0.45
118631,36844560	9.4	7.8	55806.1	63994	139	179	0.5
117927,15766169	207.2	6.7	55642	60582	125	185	0.45
118475,52691508	152.2	6.8	55768.5	56734	124	156	0.45
116147,14170716	310.5	21.9	55387.5	53805	112	178	0.55
117639,30571557	307.9	1	55589.6	53542	116	184	0.33
118741,43101116	267.6	-4.4	55834.4	51756	116	191	0.56
119037,60175569	221.9	3.2	55896.9	51631	109	158	0.58
116082,62251639	138.9	47.6	55370.7	51112	109	189	0.37
118615,37865356	31.2	11.8	55803	50376	109	190	0.49