



High Energy Physics - Experiment

IceCube as a discovery observatory for physics beyond the standard model

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(Submitted on 26 Jul 2011)

Construction of the cubic-kilometer neutrino detector IceCube at the South Pole has been completed in December 2010. It forms a lattice of 5160 photomultiplier tubes monitoring a gigaton of the deep Antarctic ice for particle induced photons. The telescope is primarily designed to detect neutrinos with energies greater than 100 GeV from astrophysical sources. Beyond this astrophysical motivation IceCube is also a discovery instrument for the search for physics beyond the Standard Model. Owing to subfreezing ice temperatures, the photomultiplier dark noise rates are particularly low which opens up tantalizing possibilities for particle detection. This includes the indirect detection of weakly interacting dark matter, direct detection of SUSY particles, monopoles and extremely-high energy phenomena.

Comments: To appear in the Proceedings of the 46th Rencontres de Moriond

Subjects: **High Energy Physics - Experiment (hep-ex)**; High Energy Astrophysical Phenomena (astro-ph.HE)

Cite as: [arXiv:1107.5227 \[hep-ex\]](#)
(or [arXiv:1107.5227v1 \[hep-ex\]](#) for this version)

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[v1] Tue, 26 Jul 2011 14:36:27 GMT (947kb,D)

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