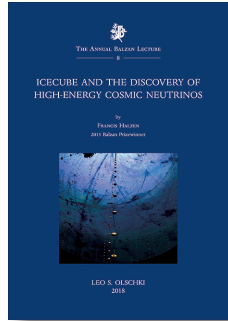


FRANCIS HALZEN

ICECUBE AND THE DISCOVERY OF HIGH-ENERGY COSMIC NEUTRINOS

The IceCube Neutrino Observatory was constructed at the Amundsen–Scott South Pole Station in Antarctica. Its thousands of sensors distributed over a cubic kilometre under the Antarctic ice have opened a new window onto the universe. In attempting to detect neutrinos from the most violent astrophysical sources like exploding stars or gamma ray bursts, IceCube is a powerful tool to search for dark matter. In this lecture on the IceCube project, Principal Investigator Francis Halzen explains



his physicist's view of astronomy and the relevance of cosmic neutrinos for understanding the origin of the highest energy cosmic rays, concluding with a view of what «IceCube science» holds for the future. The project has been underway for a number of years, with aims to produce a flux map of the northern hemisphere similar to existing maps like that of the cosmic microwave background, or gamma ray telescopes, and the implementation of plans to construct an even larger scale neutrino detector.

L'Osservatorio «IceCube Neutrino», costituito da migliaia di sensori distribuiti per un chilometro cubo sotto la superficie ghiacciata dell'Antartide, si trova presso la Stazione Scientifica Amundsen-Scott al Polo Sud. In questa presentazione del Progetto IceCube, il Principal Investigator Francis Halzen illustra la sua teoria astronomica dal punto di vista della fisica e l'importanza dei neutrini cosmici per la comprensione dell'origine dei raggi cosmici a più alta energia, concludendo con una panoramica degli sviluppi attesi in futuro grazie alla «Scienza IceCube».

FRANCIS HALZEN is a theoretician studying problems that span the particle physics, astrophysics and cosmology communities. He is currently the Principal Investigator for the IceCube project, the world's largest neutrino detector, and Gregory Breit Professor at the University of Wisconsin – Madison. He also serves on advisory committees for the SNO, Telescope Array and Auger-upgrade experiments, the Max Planck Institutes in Heidelberg and Munich, the ICRR at the University of Tokyo, the US Particle Physics Prioritization Panel and the ApPEC particle astrophysics advisory panel in Europe.

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