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## Latest Results from the IceCube Neutrino Observatory

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Nearly a century after the discovery of cosmic rays their sources remain a mystery. The study of neutrinos along with other cosmic messengers is vital for ultimately identifying the sources of cosmic rays and understanding the nature of the underlying acceleration mechanisms. Neutrinos are especially important as they propagate nearly unperturbed through the universe and point back to their sources.

Neutrino astronomy enters a new era with the IceCube neutrino observatory that will instrument a volume of one gigaton of ice by 2011 and is now almost three quarters complete. Current neutrino flux predictions from potential sources suggest that at volume of this scale is needed to detect neutrinos at statistically significant rates.

We will present the latest results in the search for astrophysical neutrinos with IceCube and its predecessor AMANDA, which has been operational for the last eight years. We will further present results on indirect searches for dark matter, studies of atmospheric neutrinos, and cosmic rays performed with this multi-purpose experiment. Future extensions to IceCube and the status of the DeepCore sub-detector, whose construction has already started, will be given together with an outlook of future physics potential.

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**Classification de Session:** Dark Matter - Astroparticle Physics