Results from the AMANDA experiment

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The AMANDA [1] (Antarctic Muon and Neutrino Detector Array) detector is a high energy neutrino telescope located at the geographic South Pole and uses the transparent 3 km thick ice sheet as Cherenkov medium. The detector was constructed between November 1995 and February 2000. It consists of 677 optical modules (OM) on 19 strings deployed to depths between 1300 and 2400 meters.
Neutrinos are inferred from the arrival times of Cherenkov light emitted by charged particles produced in neutrino interactions, the light being detected by photomultipliers located in the OM's.
The main goal of the AMANDA neutrino telescope is the search for extra-terrestial neutrinos from sources such as Active Galactic Nuclei (AGN) and Gamma Ray Bursts (GRB), which will give insight into the acceleration mechanisms. It can also be used to search for non-baryonic dark matter in the form of weakly interacting massive particles (WIMPs) as well as for exotic particles like magnetic monopoles. With only 130 days livetime in 1997, these searches have yield limits competitive with those of the other experiments working in the same field.
We first discuss a sample of identified atmospheric neutrinos and compare their flux to prediction. We then report on the status of the search for high energy neutrinos of astrophysical origin, WIMPs and magnetic monopoles.

References

[1] E. Anders et al., Astropart. Phys., **13** (2000) 1.