

The IceCube experiment will be complementing its baseline detector design, optimized for detection of neutrinos in the TeV-PeV energy range, with a deep and dense sub-array dubbed "Deep Core." The number of strings, the spacing of the optical modules on those strings, and the choice of PMT based on recently completed design studies will be presented. The Deep Core modules will be nestled in the extremely clear ice at the bottom-center of IceCube. Deep Core will thus be able to take advantage of the surrounding IceCube array as an active and efficient veto against cosmic-ray muon background, and will give access to substantially lower energy neutrinos over 4π solid angle. We expect to be able to analyze data from neutrinos at energies starting as low as about 10-20 GeV.

Relative to the IceCube baseline array, Deep Core is expected to have enhanced sensitivity to lower mass WIMP dark matter, point sources of neutrinos in the southern hemisphere, including the galactic center, neutrino oscillations at neutrino energies that overlap and exceed those accessible to other experiments, and lower energy tau neutrinos.