BAYESIAN EVENT RECONSTRUCTION AND BACKGROUND REJECTION IN NEUTRINO DETECTORS

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Several large volume, high energy neutrino detectors are in operation or in the design stage. Upward going signal neutrino events must be separated from large backgrounds of downgoing cosmic ray muons. To this end, a Bayesian extension of the traditional maximum likelihood reconstruction method will be described. Further, it will be shown how signals can be separated from backgrounds through integration of Bayesian posterior probability densities.