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Non-Parametric Bayesian Event Reconstruction in Super-Kamiokande

We present an update to a method for non-parametric, Bayesian neutrino event reconstruction for the Super-Kamiokande detector with the existing fiTQun event reconstruction framework, first reported at PhyStat-nu 2016 at the IPMU. Particle properties are determined in a way where the number of Cherenkov rings to be reconstructed, and therefore the number of parameters, is one of the unknowns. We discuss Bayesian model selection with Markov Chain Monte Carlo, future scalability and the issues surrounding non-parametric Bayesian reconstruction with fiTQun.

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