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Non-parametric Bayesian event reconstruction in Super-Kamiokande detector

Wednesday 10 April 2019 11:15 (15 minutes)

We present a method for non-parametric, Bayesian neutrino event reconstruction for the Super-Kamiokande detector. 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 in Water Cherenkov detectors. We also briefly discuss the application of Bayesian methods in other contexts within T2K and Super-Kamiokande.

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