Signal Extraction of the Solar Neutrino Neutral-Current Flux with the Sudbury Neutrino Observatory Neutral Current Detectors

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Phase III of the Sudbury Neutrino Observatory (SNO) experiment began after the installation of the Neutral-Current Detection (NCD) array in the D2O-filled acrylic vessel. This phase provides an independent measurement of the flux of solar neutrinos, detected via Neutral-Current interactions breaking apart deuterons with the resulting neutrons captured by the NCD array. The measurement with NCDs leads to increased precision on the solar neutrino mixing parameters. This poster presents the signal extraction methods used to measure the SNO phase III solar neutrino fluxes. The signal extraction is an extended log likelihood method designed to perform a joint fit of the photomultiplier (PMT) data and NCD data. The correlations between the observed signals and systematic uncertainties were treated by floating the nuisance parameters, both by a statistical sampling method, and by performing a Markov-Chain Monte Carlo.