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Feldman-Cousins' ML Cousin

The statistical treatment of sterile neutrino searches suffers from the fact that Wilks' theorem, a beneficial simplifying assumption, does not hold across all regions of parameter space. The alternative, the Feldman-Cousins algorithm, suffers from expensive computational runtimes that prohibit its application into many-experiment global fits. This contribution introduces a deep learning-based method (which does not assume Wilks' theorem) that can fit electron (anti)neutrino disappearance experiments in a tractable amount of time. Though this procedure's utility for sterile neutrino searches are presented here, it will be useful for a variety of particle physics analyses.

Primary Field of Research

Particle Physics

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