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Elastic neutrino-electron scattering perspectives at nuclear reactors

The determination of the weak mixing angle, $\sin^2\theta_W$, at low momentum transfers remains a powerful test of the Standard Model and its potential new physics extensions. Here, I will explore some physics opportunities at present and future reactor neutrino experiments through elastic neutrino-electron scattering (EνES). I will show the expected sensitivity to the weak mixing angle considering the CLOUD, TAO, and DANSS experimental configurations. Additionally, I will present the projected upper limits for the non-standard neutrino interactions (NSI), effective neutrino magnetic moment (μ_ν) and the neutrino transition magnetic moments (Λ_i). These results demonstrate the physics potential of the EνES channel at current and upcoming reactor-based neutrino experiments.

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