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Simulation of Reactors for Antineutrino Experiments Using DRAGON

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From the discovery of the neutrino to the precision neutrino oscillation measurements in KamLAND, nuclear reactors have proven to be an important source of antineutrinos. As their power and our knowledge of neutrino physics has increased, more sensitive measurements have become possible. The next generation of reactor antineutrino experiments require more detailed simulation of the reactor core. Many of the reactor simulation codes are proprietary which makes detailed studies difficult. Here we present the results of the open source DRAGON code and compare it to other industry standards for reactor modeling. We use published data from the Takahama reactor to determine the quality of the simulations. The propagation of the uncertainty to the antineutrino flux is also discussed.

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