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A review on the reactor antineutrino flux and reactor based neutrino experiments

WEI WANG, College of William & Mary

The pure antineutrino flux from nuclear reactors has unique contributions to neutrino physics. We will first briefly review the past and the current reactor based neutrino experiments with more emphases on the current generation short-baseline reactor experiments Daya Bay, RNEO and Double Chooz. In coming years, while the current generation of short-baseline reactor neutrino experiments provides more accurate measurement of θ_{13} and reactor antineutrino flux, very short-baseline and medium-baseline reactor neutrino experiments are being carried out and proposed. The VSBL experiments are aiming at shedding light at the so-called reactor anomaly problem and provide pure isotope antineutrino flux measurements. The medium-baseline effort is taking the challenge of determining the neutrino mass hierarchy and measuring the solar sector oscillation parameters and atmospheric mass-squared split to $<1\%$ level. We will also briefly review the reactor antineutrino flux calculation and its key issues and impact to future experiments.