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The State of the Neutrino Mixing Matrix

PATRICIA VAHLE, College of William and Mary

The observation of neutrino flavor oscillation proves that the neutrino must have mass and implies that the description of the neutrino does not just involve the three familiar neutrino states, ν_e , ν_μ , and ν_τ , but must also incorporate mass states, ν_1 , ν_2 , and ν_3 , which are related to the flavor states by a mixing matrix. By measuring each of the elements of the mixing matrix, neutrino physicists rigorously test the physics behind neutrino oscillations, probe physics beyond our current understanding, and could uncover charge-parity violation in the neutrino sector. Violation of this symmetry is an important component of the nature of the weak interaction and is hoped to explain the observed excess of matter over antimatter in our Universe. In this talk, we review the accelerator and reactor experiments that provide measurements of the elements of the mixing matrix and review the prospects of future experiments to measure the remaining unknown elements.