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3-flavor oscillations with current and future reactor experiments[1]

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Nuclear reactors have been a crucial tool for our understanding of neutrinos. The disappearance of electron antineutrinos emitted by nuclear reactors has firmly established that neutrino flavor oscillates, and that neutrinos consequently have mass. The current generation of precision measurements rely on some of the world's most intense reactor facilities to demonstrate that the electron antineutrino mixes with the third antineutrino mass eigenstate ($\overline{\nu}_3$). Accurate measurements of antineutrino energies robustly determine the tiny difference between the masses-squared of the $\overline{\nu}_3$ state and the two more closely-spaced $\overline{\nu}_1$ and $\overline{\nu}_2$ states. These results have given us a much clearer picture of neutrino mass and mixing, yet at the same time open major questions about how to account for these small but non-zero masses in or beyond the Standard Model. These observations have also opened the door for a new generation of experiments which aim to measure the ordering of neutrino masses and search for potential violation of CP symmetry by neutrinos. I will provide a brief overview of this exciting field.

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