Are We Descended From Heavy Neutrinos?

Boris Kayser
Fermilab
Theoretical Physics Department

ABSTRACT:

We review what has been learned about neutrinos since the discovery of neutrino oscillation 15 years ago. We then identify open questions, and focus on three of them: 1. Is the physics responsible for neutrino masses different from that responsible for the masses of all the other known particles? 2. Are there sterile neutrinos—neutrinos that do not experience any of the known forces of nature except gravity? 3. Do neutrino interactions violate the matter-antimatter symmetry CP? If they do, are we all descended from heavy neutrinos that lived briefly in the early universe, and then decayed in a CP-violating way that led to a universe containing matter but no antimatter?