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**The Mysterious Neutrinos – Clues from Astrophysics and Cosmology**

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The potential importance of neutrinos to understanding astrophysics and cosmology is enormous. Neutrinos can reveal the interior conditions of dense objects; their energy and mass density help shape the visible universe. However, this promise has barely been exploited, due to the difficulties of detecting neutrinos and their subtle effects. We are entering an era where rapid progress is expected in both the detection of neutrinos from astrophysical sources and in revealing the effects of neutrinos on cosmological measurements. Progress in these areas will simultaneously test the properties of neutrinos – e.g., self-interactions, the existence of sterile neutrinos, and the absolute neutrino mass scale – with a sensitivity that will be difficult, if not impossible, to match in the lab.