Flavor and Spectral Probes of New Physics at IceCube

The IceCube neutrino observatory has observed a new source of ultrahigh energy neutrinos extending to PeV energies. The high energies and long distances traveled by these neutrinos make them excellent probes of new physics in the neutrino sector that is otherwise hidden from us. Using both current and projected future data, Dr. Shoemaker will examine the sensitivity of spectral and flavor information at IceCube to a variety of new physics scenarios. Interestingly, the sensitivity to neutrino self-interactions is complementary to that offered by early universe physics. He will also illustrate this complementarity in a sterile neutrino model that may be hinted at by the tension in short-baseline and cosmological data.