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Where do high-energy astrophysical neutrinos come from?

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The discovery of TeV-PeV astrophysical neutrinos in 2013 by IceCube precipitated the decade of spectacular progress in which we thrive today. So far, we have found the first extragalactic transient and steady-state sources of high-energy astrophysical neutrinos, plus neutrinos from comparatively nearby, the Galactic Plane. I will review these discoveries, what we have learned about the first neutrino sources, and the larger insight we have garnered from them—and from the non-detection of neutrinos from other candidate sources—about the population of unresolved sources responsible for the bulk of the detected neutrinos. Finally, I will show fascinating prospects for the next decade or two: an enhanced, all-sky potential to discover much dimmer sources of high-energy neutrinos, thanks to a global distributed network of neutrino telescopes, and the discovery of long-sought ultra-high-energy neutrinos, above 100 PeV, which may finally reveal the origin of ultra-high-energy cosmic rays.

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