

Nobel Prize: Neutrinos from Far, Far Away

Neutrino astronomy and the effort to build a cubic-kilometer-sized detector at the South Pole are recognized by the 2026 Nobel Prize in Physics.

By **Michael Schirber**

This story will be updated with a longer explanation of the Nobel-winning work on Thursday, 8 October.

When it comes to messengers from space, neutrinos seem meager: Interacting only through the weak nuclear force, they barely register in Earthly detectors. But unlike cosmic rays and photons, neutrinos are neither deflected nor attenuated during their journeys and thus can deliver information that other astronomical messengers cannot. This year's Nobel Prize in Physics recognizes the potential of neutrino astronomy and the assiduous efforts of Francis Halzen to bring it to fruition. Halzen, a particle physicist from the University of Wisconsin–Madison, was the leading force behind the IceCube Neutrino

Observatory—a cubic-kilometer-sized detector operating in Antarctic ice since 2010. Shortly after its construction, Halzen and his colleagues reported the first evidence of neutrinos originating from cosmic sources [1, 2]. Further study of these astrophysical neutrinos may provide information about the powerful events that produce high-energy cosmic rays.

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REFERENCES

1. M. G. Aartsen *et al.* (IceCube Collaboration), “First observation of PeV-energy neutrinos with IceCube,” *Phys. Rev. Lett.* **111** (2013).
2. M. G. Aartsen *et al.* (IceCube Collaboration), “Observation of high-energy astrophysical neutrinos in three years of IceCube data,” *Phys. Rev. Lett.* **113** (2014).



Nobel laureate Francis Halzen.

Credit: N. Elmehed/Nobel Prize Outreach