



2026 WINTER CONFERENCE

PHYSICS AND ASTROPHYSICS OF NEUTRINO-DENSE ENVIRONMENTS

JANUARY 4 – 9, 2026

**Sunday evening welcome reception
through Friday evening**

A thorough understanding of neutrino flavor transformation is essential for interpreting observations of neutron star mergers, core-collapse supernovae, and the early universe. Despite its significance, its impact on the dynamics of these events, as well as on their multi-messenger signals and nucleosynthesis yields, remains poorly understood. This hinders our ability to connect kilonovae observations, including recently obtained James Webb Space Telescope (JWST) spectra, with the nuclear physics of neutron-rich isotopes being unveiled at facilities such as the Facility for Rare Isotope Beams (FRIB) at Michigan State University. In the cosmological context, this physics is important for exploring lepton number constraints, and vetting beyond-standard-model possibilities with light element abundances, N_{eff} , the sum of neutrino masses, etc. In turn, these quantities are key targets for cosmic microwave background (CMB) Stage-4 experiments. Addressing this challenge requires expertise beyond the scope of any single research group or discipline. Progress demands a concerted, collaborative effort that bridges efforts in time-domain astronomy and cosmology, nuclear/particle theory—ranging from magnetohydrodynamics to quantum many-body theory—and neutrino experiments. The Aspen Center for Physics winter workshop is designed to unite experts across these domains, making explicit connections between the fundamental physics of neutrino flavor transformations with planning and interpreting observations in cosmology and transient science.

APPLICATION DEADLINE – SEPTEMBER 15, 2025

PLEASE COMPLETE YOUR APPLICATION AT:
<https://aspenphys.org/winter-conferences/>

Conference Website:
<https://indico.phys.utk.edu/event/169/>

ORGANIZERS:

George Fuller, University of California San Diego

***Anna Ho**, Cornell University

Gail McLaughlin, North Carolina State University

David Radice, Pennsylvania State University

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*SCIENTIFIC ADVISOR

**PROPOSALS FOR THE 2027 WINTER CONFERENCES ARE INVITED
AND MUST BE SUBMITTED BY JANUARY 15, 2026**

ASPEN CENTER FOR PHYSICS

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