Generation IV International Forum SM

EDUCATION AND TRAINING TASK FORCE

# Join us on November 19, 2020 for the next GEN IV webinar

# Neutrino and Gen IV Reactor Systems

Neutrinos were first conceived of in a desperate ploy to save the conservation of energy in nuclear beta decay. From a nuclear engineering perspective, they are an ever present but ultimately inconsequential by-products of nuclear fission. But to particle physicists, nuclear reactors are an essential and extraordinarily bright source of neutrinos, which are responsible for some of the most important advancements of the last 70 years, from the discovery of the neutrino at the Savannah River's P reactor in 1956, through current times when reactors are used as the source for studies of neutrino fundamental properties.

Advances in neutrino detector technology and a recent finding that neutrinos can be used to track the production of plutonium in the core have made it possible for particle physicists to contemplate giving back to the nuclear industry. As a new type of non-invasive instrumentation, neutrino detectors may, for example, have a role to play in non-proliferation safeguard regimes, particularly for advanced reactors. Ultimately, the potential of neutrino applications can only be properly assessed in a collaborative effort between particle physicists and nuclear engineers.

This webinar will review the discoveries and other major advances in neutrino physics that have been enabled by nuclear reactors, and explore the ways that neutrino detectors may be used to monitor reactors or as reactor instrumentation.

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## *Free webcast*

November 19, 2020 at 8:30 am (EST) (UTC -5)

**Register NOW** at https://attendee.gotowebinar.com/register/6399830984023644687

**Who should attend**: policy makers, managers, regulators, students, general public

## Meet the Presenter...

**Prof. Jonathan Link** received his Ph.D. in particle physics from the University of California Davis in 2001 and was a postdoctoral fellow at Columbia University before joining the Department of Physics at Virginia Tech as a faculty member in 2006. He also has an appointment of affiliated faculty in Virginia Tech's Nuclear Engineering Program.

Prof. Link has been part of several experimental collaborations, including the Daya Bay Reactor Neutrino Experiment, for which he shared the 2016 Breakthrough Prize for Fundamental Physics for his contributions to their discovery of the final neutrino mixing angle. Currently, Prof. Link is leading an effort to develop a new reactor neutrino detector technology known as CHANDLER, which recently published their first observation of reactor neutrino. The prototype detector used in this study was one of the world's smallest neutrino detectors, and the first mobile reactor neutrino detector. Prof. Link is a member of the executive group for the NNSA-funded NuTools study, which seeks to examine the potential for applications of neutrino detection to nuclear non-proliferation and the nuclear industry.

*The Generation IV International Forum invites you to attend web-based lectures on the next generation of nuclear energy systems and other cross-cutting subjects. Join internationally recognized subject matter experts and leading scientists in the nuclear energy arena for these short presentations.*

| Upcoming Webinars | |
|---|---|
| 17 December 2020 | Development of Multiple-Particle Positron Emission Particle Tracking for Flow Measurement, Dr. Cody Wiggins, University of Tennessee, USA |
| 28 January 2021 | MOX Fuel for advanced reactors, Dr. Nathalie Chauvin, CEA, France |
| 25 February 2021 | Overview of Waste Treatment Plant, Hanford Site, Dr. David Peeler, PNNL, USA |

For more information, please contact: Patricia Paviet at patricia.paviet@pnnl.gov or visit the GIF website at www.gen-4.org