Welcome to the Snowmass Artificial Neutrino Sources Workshop

Agenda and Slides:
https://indico.fnal.gov/event/46020/

Please follow the DPF Core Principles and Community Guidelines:
https://snowmass21.org/cpcg/start

How to ask questions:
Raise your hand and wait for the host to call on you.
If you don't feel comfortable speaking, you may use the chat window

You can also continue the conversation on our Slack channel:
snowmass2021.slack.com #neutrino_artificial_sources

Today's Agenda

organized jointly by NF09 + NF07

FRIDAY, 4 DECEMBER

9:00 AM → 11:45 AM **Reactor Antineutrinos (NF09 and NF07 combined)**

9:00 AM	**Brief introduction to the Session** **Speakers**: J. Pedro Ochoa (University of California at Irvine), Nathaniel Bowden (LLNL)	5m
9:05 AM	**Importance of understanding reactor antineutrino emission for basic science, monitoring, and engineering** **Speakers**: Andrew Conant (Oak Ridge National Laboratory), Dr XIANYI ZHANG (Lawrence Livermore National Laboratory)	30m
9:35 AM	**Reactor antineutrino predictions: current status and expected improvements** **Speaker**: muriel fallot (Subatech (univ. Nantes, CNRS-in2p3, IMTA))	30m
10:05 AM	**Reactor antineutrino experiments: current status and future program** **Speakers**: Bryce Littlejohn (Illinois Institute of Technology), Bryce Littlejohn	30m
10:35 AM	**Global strategy and experimental effort beyond the planned program** **Speaker**: Patrick Huber (Virginia Tech)	30m
11:05 AM	**Break**	10m
11:15 AM	**Panel Discussion** Panelists: Muriel Fallot, Leendert Hayen, Patrick Huber, Bryce Littlejohn, Alejandro Sonzogni.	30m

25+5 min talks

Panel Discussion

11:45 AM → 12:30 PM **Novel Neutrino Sources: Novel Sources #3**

11:45 AM	**Intense radioactive electron capture sources** **Speaker**: Jonathan Link (Virginia Tech)	20m
12:05 PM	**IsoDAR** **Speaker**: Daniel Winklehner (Massachusetts Institute of Technology)	20m

15+5 min talks

Goals for Reactor Antineutrino Session

- Snowmass Report should describe community needs and goals for Reactors as antineutrino sources

- ~11 LOIs were received on this topic, reflecting broad engagement and interest

- Today, we would like to begin discussion within the community on input for Snowmass:
  - What do experiments and applications need to make progress?
  - What are the promising approaches to obtaining reliable reactor predictions?
  - Ideally, developing a community strategy for producing these

- Whitepaper(s) will be needed to support the Snowmass Report and could be useful to synthesize the state of this field more broadly

Panelists

Muriel Fallot (Subatech Laboratory)

Leendert Hayen (NC State University)

Patrick Huber (Virginia Tech)

Bryce Littlejohn (Illinois Institute of Technology)

Alejandro Sonzogni (Brookhaven National Laboratory)

Tentative Questions for Panel Discussion

- When it comes to understanding and/or characterizing the reactor antineutrino flux/spectrum, what is “good enough”? Will we get there within the next 10 years?
- Given the disagreement between conversion predictions and measurements, and that independent confirmation of the single set of underlying beta measurements would be a significant and difficult undertaking, do we need to consider establishing a benchmark prediction via other techniques?
- Can you list the top priorities (maximum 3) in your mind that the community should focus on for the next 10 years?
- How does the reactor antineutrino prediction falling under several funding umbrellas (e.g. nuclear physics, high-energy physics, non-proliferation) hinder progress and collaboration? What could be done to mitigate those obstacles?
- Do you think there would be interest in the communities that you represent to try to come together and formulate a common strategy? If not, what are the hindrances?