Day 1, panel 2

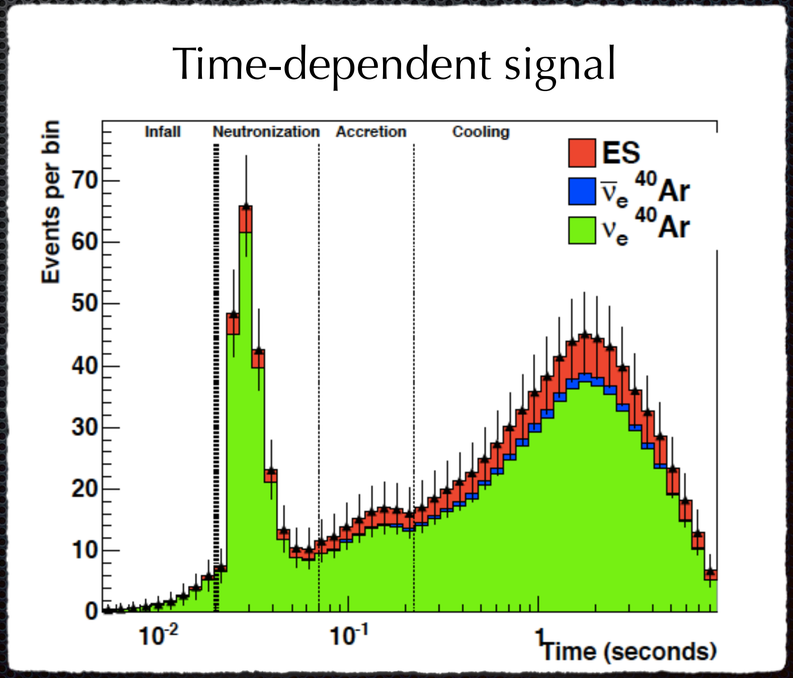
Supernova burst, diffuse supernova neutrino background, solar neutrinos

Panelists

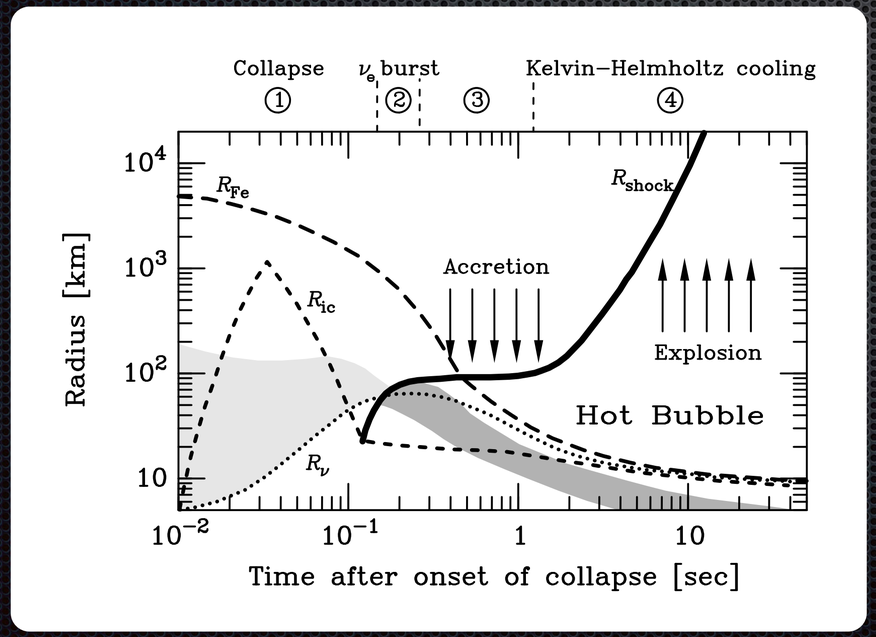
- Bronson Messer (ORNL/U. of Tennessee)
- Christopher Grant (Boston U.)
- Cecilia Lunardini (Arizona State)
- Gabriel Orebi Gann (LBNL/UC Berkeley)
- Thomas Janka (MPI, Garching)

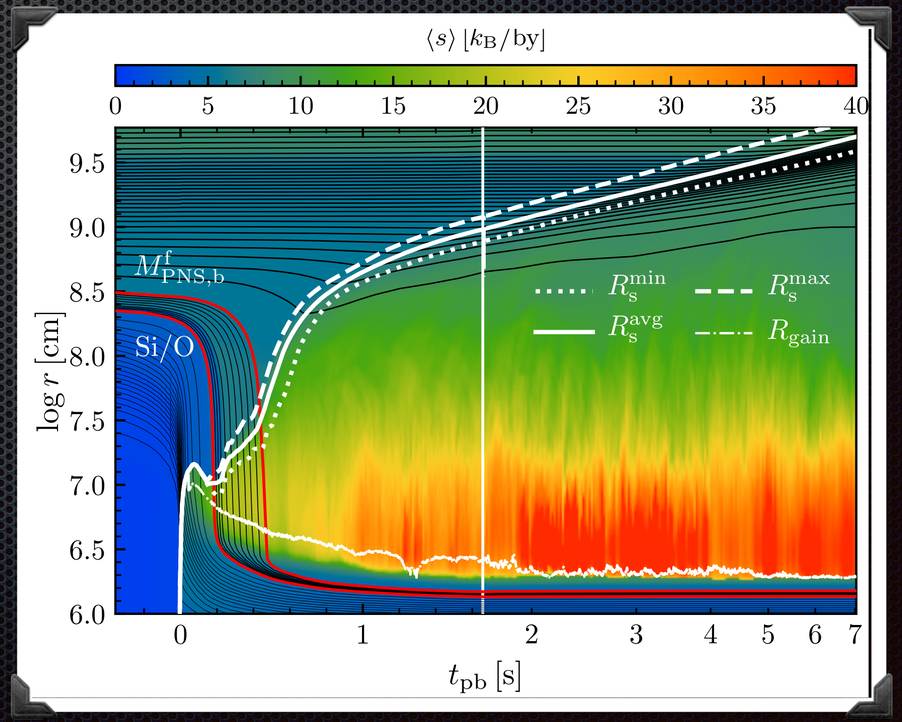
Moderator: Alex Friedland (SLAC)

1. How can observing thousands of electron neutrinos at DUNE test the explosion paradigm?

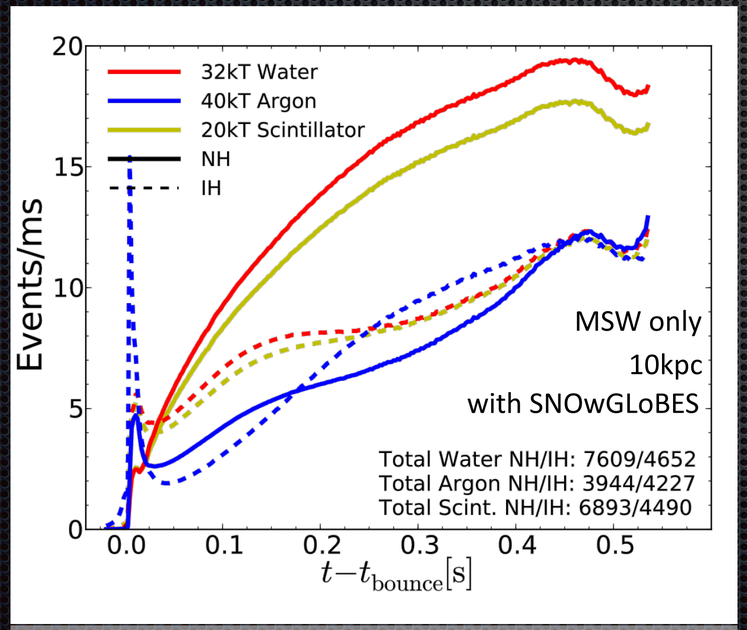


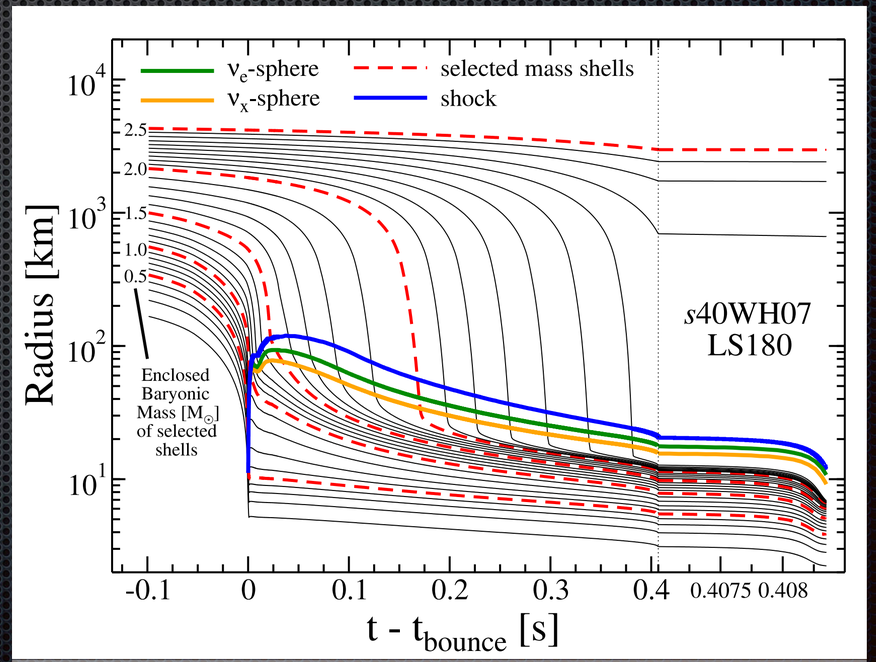
2. What can we learn from each stage of the explosion: onset/neutronization burst, accretion stage, cooling stage?



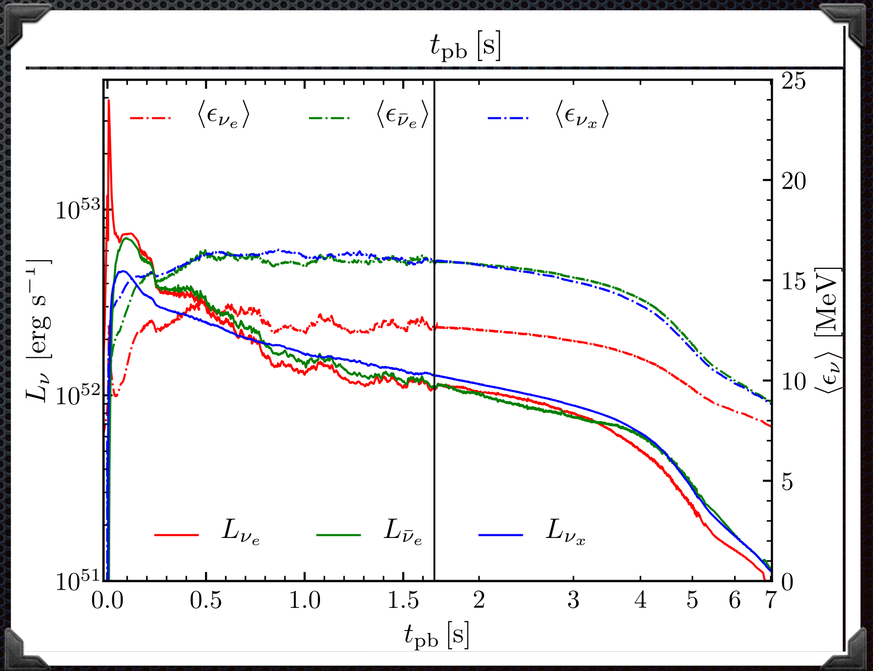


3. What signatures are especially important to measure if the signal indicates black hole formation?



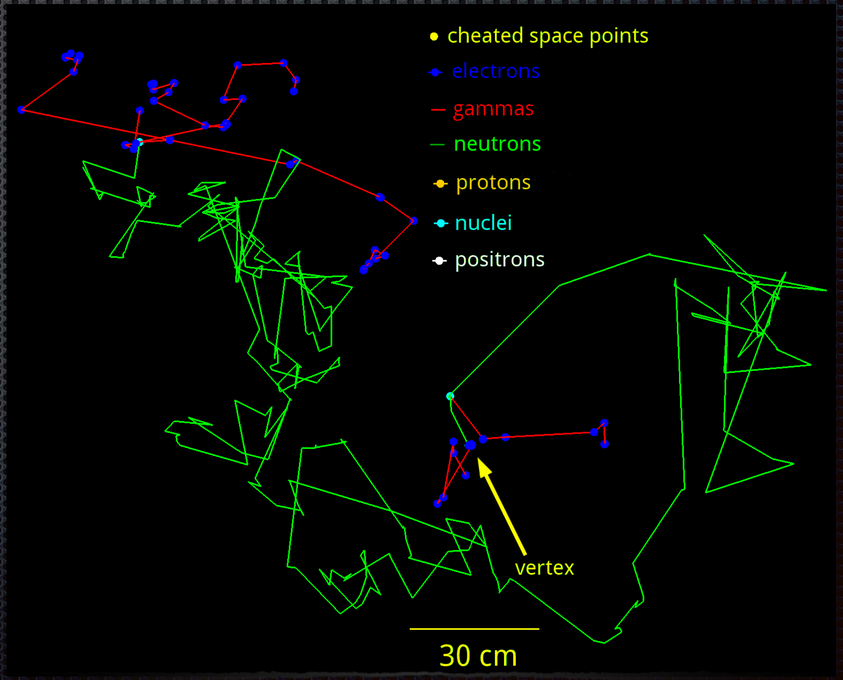


4. What are the benefits of accurately measuring SN neutrino energies?

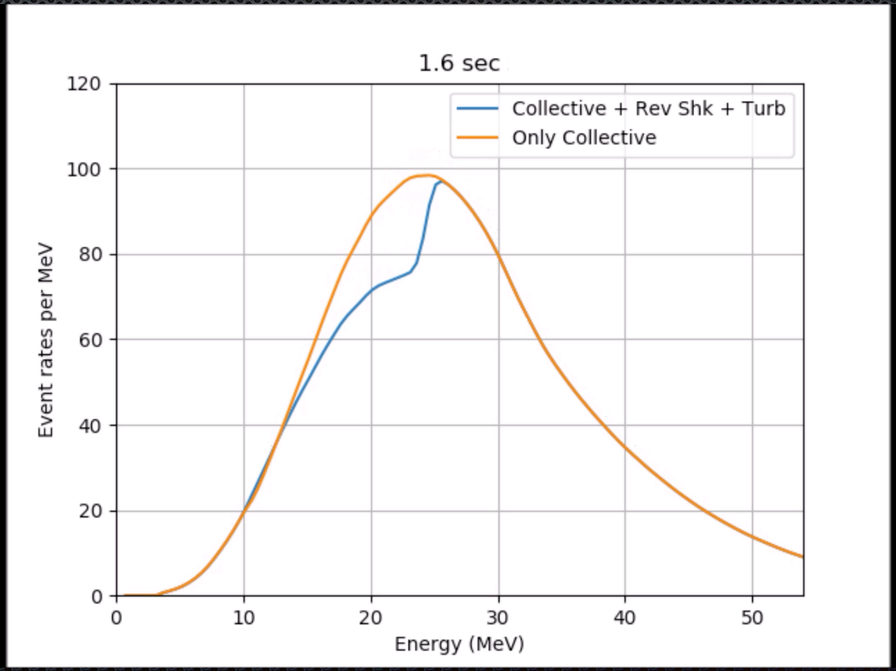


5. What considerations dictate SN/solar neutrino energy calorimetry at DUNE? What are the main obstacles we should worry about?

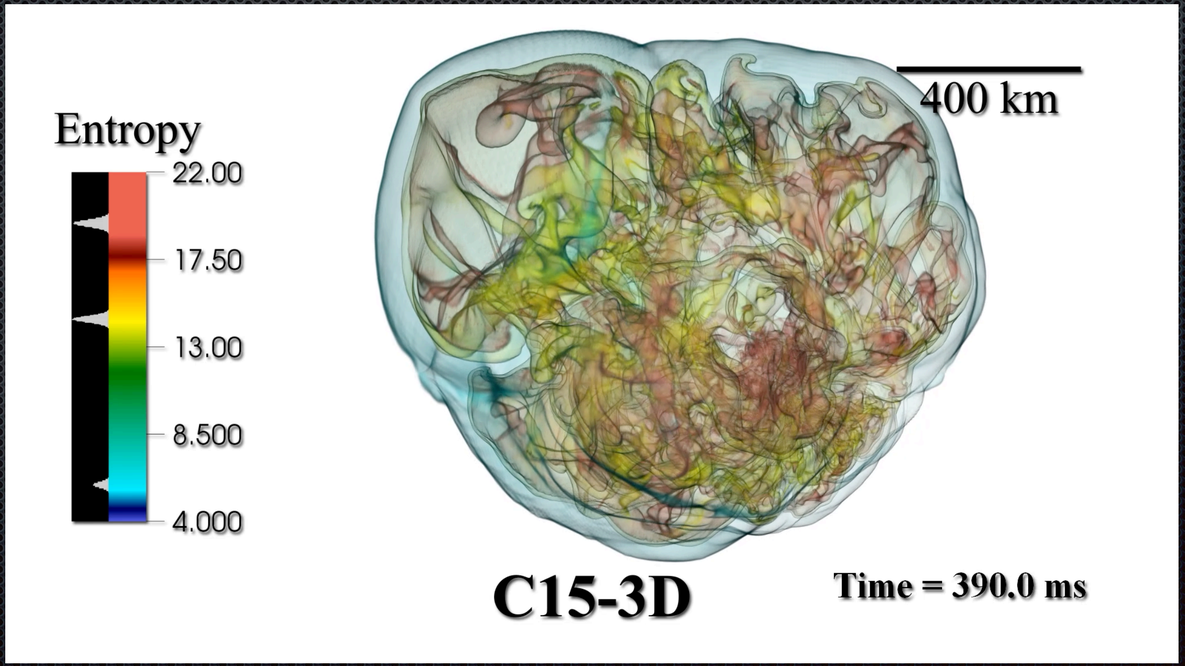
- cross-section measurements?
- neutron transport in LAr?
- synergies between charge and light?
- Machine learning for reconstruction?



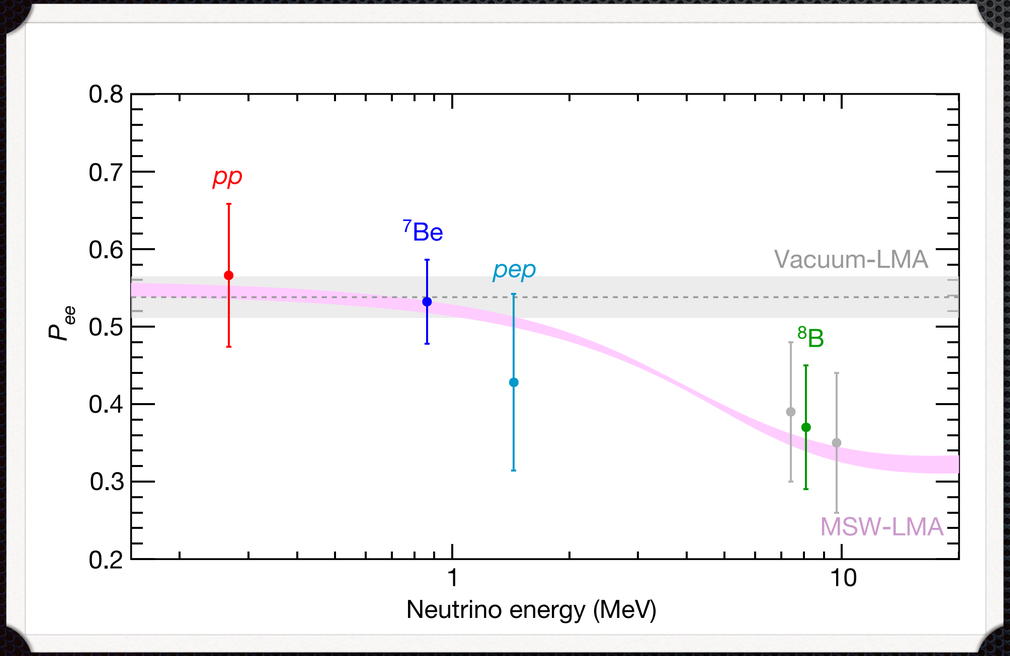
6. Can oscillation effects and explosion physics be disentangled?

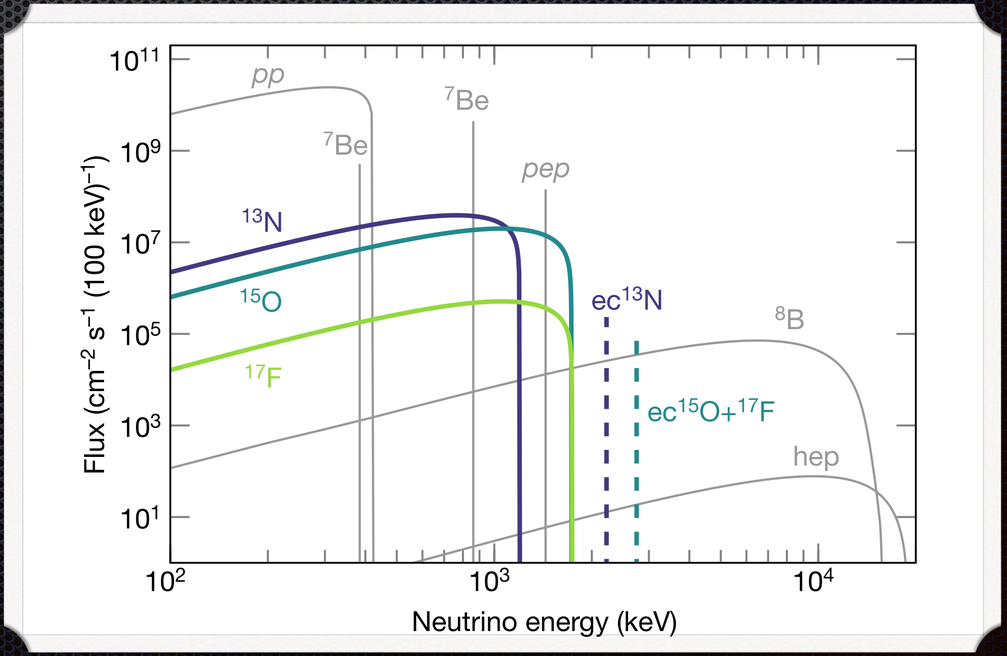


7. What keeps the supernova modelers up at night in 2020?

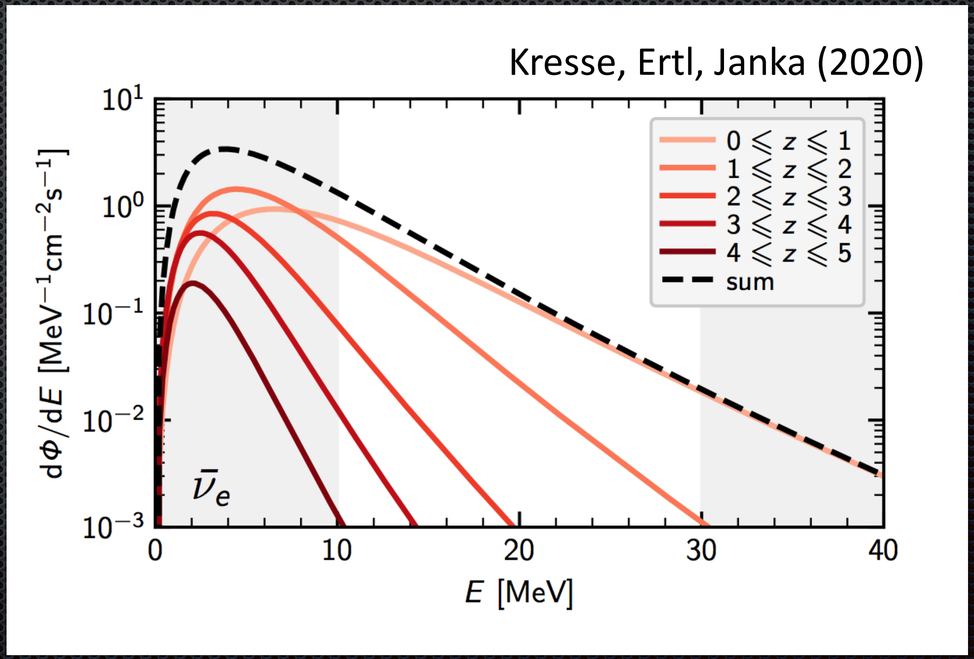


8. What is the status of the solar neutrino measurements? What open questions can DUNE help address?





9. What can be learned if DSNB neutrinos are observed at DUNE?



Overall: what key MeV neutrino detection signatures should experimentalists focus their effort on in DUNE?