

Nuclear Astrophysics (un-conference) Working Group

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- What is the goal of an “un-conference”? → Put the “Working” back in “Working group”...
 - **NO** talks
 - Participant-driven topical working subgroups
 - Did it work? . . . Participants seemed engaged and pleased!
- Subgroup Topics and Summaries
 - (α, n) reactions
 - physics: (α, n) reactions during weak r-process and alpha optical model potentials of n-rich nuclei
 - needs: simultaneous (α, n) and (α, α) measurements (e.g. w/ LENDA+MUSIC or JENSA+LEND A)
 - ARUNA
 - physics: variety of measurements (e.g. precision, 1st stars, etc), R&D, workforce training, complement FRIB physics
 - needs: codify ARUNA lab mission; possible ARUNA user group, executive community, and meetings
 - Data & Decay needs
 - physics: data evaluation for nuclear astrophysics; decay of n- and p-rich nuclei
 - needs: increased effort for data evaluation focusing on nuclear astro needs, communication/coordination between NA and other communities (e.g. ENDF), “manual” for data evaluation w/ public tools/codes; FRIB decay station
 - Equation of State:
 - physics: constraining EOS of neutron stars at $0.7 < \rho / \rho_0 < 2$ via constraints on ρ /mom. dependence of sym. energy
 - needs: explore instrumenting/modifying AT-TPC @ FRIB, develop TPC on HRS line
 - Masses:
 - physics: nuclear masses for the r-process
 - needs: sensitivity study of “weak” r-process masses and N = 126 factory isotopes for r-process
 - Long-Term Priorities and Opportunities in Nuclear Astrophysics
 - physics: discussed seven crucial questions from “where does the r-process occur” to stellar explosions, the early universe, dark matter/energy, and neutrino astronomy

