



Contribution ID: 22

Type: **not specified**

Integrated Neutrino Driven Wind Nucleosynthesis

Friday, 16 July 2010 11:30 (30 minutes)

Although they are but a small fraction of the mass ejected in core-collapse supernovae, neutrino-driven winds (NDWs) from nascent proto-neutron stars (PNSs) have the potential to contribute significantly to supernova nucleosynthesis. In previous works, the NDW has been implicated as a possible source of r-process and light p-process isotopes. I will present time-dependent hydrodynamic calculations of nucleosynthesis in the NDW which include accurate weak interaction physics coupled to a full nuclear reaction network. Using two published models of PNS neutrino luminosities, we predict the contribution of the NDW to the integrated nucleosynthetic yield of the entire supernova. For the neutrino luminosity histories considered, no true r-process occurs in the most basic scenario. At most, it contributes to the production of the $N = 50$ closed shell elements and some light p-nuclei. In doing so, it may have left a distinctive signature on the abundances in metal poor stars, but the results are sensitive to both uncertain models for the explosion and the masses of the neutron stars involved.

Primary author: Mr ROBERTS, Luke (UCSC)

Co-authors: HOFFMAN, Rob (LLNL); WOOSLEY, Stan (UCSC)

Presenter: Mr ROBERTS, Luke (UCSC)

Session Classification: Session 4: The r-process in core-collapse supernovae I