

Physics Division Seminar

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Galactic Forensics – Utilizing Stellar Debris to Investigate Explosive Nucleosynthesis

Host: Melina Avila

Monday, February 3, 2020 – 203, R150, 3:30 PM

Core-collapse supernovae (CCSNe) nucleosynthesis contributes significantly to the production of the chemical elements in the galaxy but the rarity of high-quality spectroscopic observations (through no fault of astronomers) hinders our understanding of these processes. What nuclei are expelled into the interstellar medium by CCSNe, and how are these nuclei made? I will discuss the concerted, multi-disciplinary approach being pursued by the nuclear astrophysics team at LLNL to probe explosive nucleosynthesis. We combine radioactive beam measurements of important reaction rates with state-of-the-art nucleosynthesis network models to make predictions for isotopic abundances that we then compare to data from in-house nano-analytical measurements of presolar CCSNe grains obtained from meteorites. I will present our first results and on-going work.