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Sandblasting The R-process: Spallation Of R-process Nuclei Ejected From A NSNS Event[1] XILU WANG, University of Notre Dame, BRIAN FIELDS, University of Illinois at Urbana-Champaign, MATTHEW MUMPOWER, Los Alamos National Lab, TREVOR SPROUSE, REBECCA SURMAN, NICOLE VASSH, University of Notre Dame — Neutron star mergers are r-process nucleosynthesis sites, which eject materials at high velocity ranging from 0.1c to 0.3c for different regions. Thus the r-process nuclei ejected from a neutron star merger event are sufficiently energetic to have spallation nuclear reactions with the interstellar medium particles. The spallation reactions tend to shift the r-process abundance patterns towards the solar data, and smooth the abundance shapes. The spallation effects depend on both the initial r-process nuclei conditions, which is determined by the astrophysical trajectories and nuclear data adopted for the r-process nucleosynthesis, and the propagation with various ejecta velocities and spallation cross-sections.

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