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r-Java: a GUI-based code for nucleosynthesis calculations JOSHUA ARENSON, PRASHANTH JAIKUMAR, Cal State Univ- Long Beach, QUARK NOVA PROJECT TEAM — r-Java is an r-process code for open use, that performs r-process nucleosynthesis calculations. Equipped with a simple graphical user interface (GUI), r-Java is capable of carrying out nuclear statistical equilibrium (NSE) as well as static and dynamic r-process calculations for a wide range of input parameters. Recent updates to the code allow us to take into account spontaneous, beta-delayed and n-induced fission rates, as well as fission fragmentation and neutron evaporation. In this talk we present the details behind r-Java, and its capabilities. We can examine high-entropy winds of supernovae, neutron star mergers and decompressing neutron-rich matter as sites for the r-process. The code can run in the waiting-point approximation as well as with a full network, generating the resulting abundance pattern based on a general entropy expression that can be applied to degenerate as well as non-degenerate matter, allowing us to track the rapid density and temperature evolution during fast ejecta expansions.

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