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## A full abundance pattern in the r-process galaxy Reticulum II

*Friday, 25 May 2018 10:15 (15 minutes)*

The ultra-faint dwarf galaxy Reticulum II experienced a single prolific r-process event that left ~80% of its stars extremely enriched in r-process elements. I will present abundances of ~40 elements derived from a high signal-to-noise and high-resolution spectrum of the brightest star in Reticulum II. Precise measurements of elements from all three r-process peaks reaffirm the universal nature of the r-process abundance pattern from Ba to Ir. The first r-process peak is significantly lower than solar but matches other r-process enhanced stars. This constrains the neutron-richness of r-process ejecta in neutron star mergers. The radioactive element thorium is detected with a somewhat low abundance. Naive application of currently predicted initial production ratios could imply an age >20 Gyr, but more likely indicates that the initial production ratios require revision. The abundance of lighter elements up to Zn are consistent with extremely metal-poor Milky Way halo stars. These elements may eventually provide a way to test for other hypothesized r-process sites, but only after a more detailed understanding of the chemical evolution in this galaxy.

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