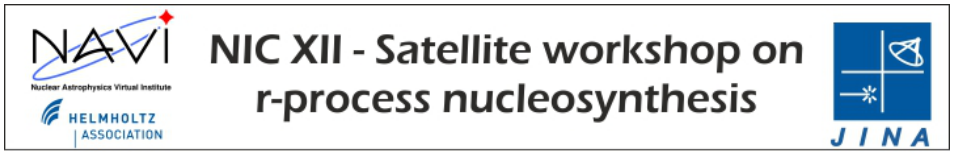


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# Chemical tagging and the second r-process

*Saturday, 4 August 2012 11:15 (30 minutes)*

The applications of stellar elemental abundances are numerous. The different groups of elements work as tracers of various formation processes, e.g. alpha-elements and odd-Z elements are created both in hydrostatic burning and supernova explosions. An abundances of every single element can trace differing features/parameters of the supernova such as mass and explosion energy.
By comparing heavy elements stemming from known neutron-capture processes to those coming from processes we still do not understand, we can learn about the similarities and differences between these formation processes.
As an example strontium is created by the weak slow neutron-capture (s-) processes, while silver is created by a weak rapid neutron-capture (r-)process. Comparing the abundances of these two elements yields anti-correlations which arise due to the different characteristics of their formation processes. This means that we can trace both process features and possible sites though a comparison of stellar abundances. Here I will focus on Sr, Y, Zr, Pd, Ag , Ba and Eu since these elements represent four different neutron-capture processes, weak and main s- and r-process, respectively.
I will furthermore show how we can use the abundance patterns of carbon to barium from stars at different evolutionary stages for chemical tagging, how we can extract information on the first stars, the formation processes as well as the chemical evolution of our Galaxy.

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