Poster at Splinter Meeting

Splinter I

HD 271791: nucleosynthesis in a core collapse supernova

V. Schaffenroth[1], N. Przybilla[1], K. Butler[3], A. Irrgang[2], U. Heber[2]

[1] *Institute for Astro- and Particle Physics, University of Innsbruck, Technikerstr. 25/8, 6020 Innsbruck, Austria*

[2] *Dr. Remeis-Observatory & ECAP, Astronomical Institute, Friedrich-Alexander University Erlangen-Nürnberg, Sternwartstr. 7, 96049*

[3] *Munich Observatory, Ludwig-Maximilian University, Scheinerstr. 1, D-86179 Munich, Germany*

Some young, massive stars can be found in the Galactic halo. As star formation does not occur in the halo, they must have been formed in the disk and been ejected shortly afterwards. There are several scenarios for the origin of such objects. One explanation is a supernova in a binary system. The companion is ejected and becomes a runaway star. HD 271791 is the kinematically most extreme runaway star known (galacic restframe velocity 725 +- 195 km/s). Moreover, an analysis of the optical spectrum showed an enhancement of the alpha elements. This indicates an origin in a supernova. As such high velocities are not reached in classical binary supernova scenarii, a very massive but compact primary, probably of Wolf-Rayet type is required. The star is a perfect candidate for studying nucleosynthesis in a core collapse supernova because of the contamination of its surface layers with supernova ejecta of its former very massive primary. The goal of this project is to determine the abundances of a large number of elements from the alpha process, the iron group, and heavier elements by a quantitative spectral analysis of the optical and the UV with detailed stellar atmosphere models taking into account deviations from the local thermal equilibrium (NLTE). The first step was to include all atomic data available for this elements in the UV spectrum synthesis. This was tested with nearby, slowly rotating B comparison stars. Now we are able to determine abundances of iron group and heavier elements from the UV, at the moment in LTE later also in NLTE. The abundance analysis is done differential with bright B type comparison stars. Here we want to state the current status of the project.