

## Nuclei in the Cosmos (NIC XVII)



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# Radioactive Decay Lines from the Milky Way - the Pathways of Stellar Ejecta

*Tuesday, 19 September 2023 11:00 (30 minutes)*

Soft gamma ray lines from radioactive decay of  $^{26}\text{Al}$  and  $^{60}\text{Fe}$  as well as annihilation of positrons have been observed from the Milky Way. The respective emission contains information about the ejecta of supernovae, massive-star winds and possibly winds related to neutron stars and black holes. The distinct spatial structure of the different lines allows to trace the flow of the ejecta through the interstellar medium. We have modelled these processes with 3D hydrodynamic simulations. We find that a large fraction of the massive star ejecta leaves their immediate surroundings quickly, likely in large superbubble structures, and may even diffuse into the Galactic halo on the decay timescale of  $^{26}\text{Al}$  (~1 Myr). I will discuss our simulation results and prospects of the upcoming NASA mission COSI to trace nucleosynthesis ejecta in the interstellar medium.

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