

Short-lived radionuclei as clocks for the prehistory of the Solar System

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While we know that stars are born in groups (clusters) within stellar nurseries, i.e., (possibly giant) molecular clouds, perhaps surprisingly, we do not have any consensus on the type of stellar nursery and stellar cluster where our Sun was born. Radioactive nuclei with half-lives between roughly 10 and 100 Myr were present in the early Solar System, as indicated by high-precision meteoritic analysis. They provide accurate clocks to measure the timing of the events that predated the formation of the Sun's stellar nursery. By comparing predictions from the evolution of their galactic abundances to the meteoritic data we can build up a time line for the nucleosynthetic events that pre-dated the birth of the Sun (Figure 1), and investigate the lifetime of the stellar nursery where the Sun was born. However, many hurdles are still present between us and a clear picture of the Sun prehistory. These difficulties take the form of uncertainties in nuclear physics properties, stellar production, and Galactic evolution. We will present the current knowledge and discuss what is required to make the picture in focus.

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