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MARIA LUGARO

KONKOLY OBSERVATORY (HUN-REN CSFK, BUDAPEST)

Nuclear burning recorded in meteorites as a tracer of the birth of the Sun and its planets

Abstract: The abundances of the chemical elements and their isotopes in the Solar System have been used for decades as a main constraint for the study of the origin and evolution of matter in the Galaxy and in the Universe, and of the nuclear processes that create these elements inside stars. However, more recent analysis of meteorites has discovered that isotopic abundances were variable in the protoplanetary disk, carrying the imprint of individual stellar material, such as stardust. In this talk, I will show how interpretation of these data, also with the help of nuclear astrophysics, can shed light on the formation of the Sun and its planets.



Maria Lugaro studied in Torino, then moved to Australia for her PhD, and subsequently worked in the UK, the Netherland, and is now Research Professor at the Konkoly Observatory in Hungary and corresponding member of the Hungarian Academy of Sciences. Her work focuses on the production of the elements heavier than iron and of radioactive nuclei in stars, as well as on the origin of meteoritic stardust and of other signatures of nuclear processes in meteorites. To carry out this research she was awarded, among others, the Australian Future Fellowship, the Hungarian Momentum grant, and an ERC Consolidator grant.