

AMS measurements in nuclear astrophysics

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The complex isotopic signature of our solar system and that observed in stars can be understood as interplay between fundamental nuclear physics properties and the specific conditions of the stellar environment. Nuclear reactions shape the stellar evolution of stars and determine the different astronomical abundances. Key ingredients to our understanding of nucleosynthesis and the isotopic pattern of our environment are accurate cross-section data. Accelerator mass spectrometry (AMS) represents a sensitive technique for studying nuclear reactions through ultra-low isotope ratio measurements while simulating stellar nucleosynthesis processes in the laboratory. In recent years AMS measurements of neutron- and charged particle induced cross sections relevant to nuclear astrophysics have become an important complementary technique to other conventional techniques like activation and online measurement methods detecting prompt radiation signatures. AMS has successfully contributed with precise data thus elucidating current open questions e.g. within the s-process path.

An overview on recent activities of the AMS technique in nuclear astrophysics will be given including applications relevant for Big-Bang nucleosynthesis and s-process nucleosynthesis. These new results will be compared to recent space-born observations of stellar nucleosynthesis processes.