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# Towards the measurement of the cross section of the $^{13}C(d,p)^{14}C$ nuclear reaction using AMS

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An experimental protocol to study the total cross section for the $^{13}C(d, p)^{14}C$ nuclear reaction via AMS is being developed for energies in the center-of-mass frame between 100 and 533 keV. We started a series of experiments in which two aluminium cathodes filled with natural-graphite (98.9% 12C, 1.1% 13C) were irradiated at a deuterium energy of 4 MeV at the 6.0 MeV Tandem Van de Graaff Accelerator of the Instituto Nacional de Investigaciones Nucleares (ININ) in Mexico. The number of incident particles was determined using RBS techniques. The relative concentrations of $^{14}C/^{12}C$ were analyzed using AMS at the Laboratorio Nacional de Espectrometría de Masas con Aceleradores (LEMA) of the Universidad Nacional Autónoma de México (UNAM). The relevance of the $^{13}C(d, p)^{14}C$ reaction in the study of compound nucleus formation as well as in some astrophysics scenarios, and the importance of the development of the AMS technique to measure cross sections of nuclear reactions of astrophysical interest in Mexico are also discussed.

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