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New Results with TECSA –the d(26Alm,p)27Al experiment

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The detection of gamma rays from the decay of the 26Al ground state in the galaxy gives evidence that nucleosynthesis is occurring in present-day stars, but its origin is not yet clear. This implies that reactions involving 26Al are important for astrophysical processes.
In a recent experiment at Texas A&M University, reactions with the ground state and isomeric state of 26Al were investigated with the Texas A&M-Edinburgh-Catania Silicon Array (TECSA). We measured d(26Alg,p)27Al and d(26Alm,p)27Al with an 26Al secondary beam prepared in-flight with the MARS spectrometer. First, the composition of the 26Al beam was determined by measuring the ratio of beta-decays to 26Al ions produced. It was found that at different spectrometer rigidities, beams of 2/3 isomer to ground state ratio or vice-versa could be obtained. Then, in the second part of the experiment, angular distributions were measured for both reactions. The protons were measured in coincidence with timing signals from the beam beam detected by a scintillator and with the cyclotron radio-frequency.
Details of the experiment and results from the analysis of the d(26Alm,p)27Al and d(26Alg,p)27Al data will be presented. They will give information about the proton capture reactions 26Alm(p,γ)27Si and 26Alg(p,γ)27Si taking place in stars.

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