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Comparison of 18O+12C at 16.7 MeV/nucleon reaction with the AMD+GEMINI++ model.

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In this talk I will present a comparison between the experimental data and the transport model AMD [1] (Antisymmetrized Molecular Dynamics) coupled with GEMINI++ as afterburner[2] for the reaction ^{18}O+^{12}C at 16.7 MeV/nucleon measured using the GARFIELD+RCo [3] apparatus at LNL.
Considering some recent systematics [4,5], in our system the statistical process are only a small part of the total cross section and the presence of dynamical effects in systems with a similar bombarding energy has been already shown in [6]. On the other hand, the bombarding energy and the size of this system is such that we are still not completely in the energetic and mass regime where a dynamical code has been compared and fully validated through the experimental data comparison.
The aim of this comparison is to test for the first time the AMD code at low energy (below 25 MeV/nucleon) with a light system. This work has shown that AMD+GEMINI++ is able to predict all the different mechanisms from which fragments can be produced, but with different cross sections with respect to the experimental ones. In particular, AMD+GEMINI++ fails in populating the velocity region close to the center of mass velocity as already pointed out in [7] for the light systems ^{32}S + ^{12}C and ^{20}Ne + ^{12}C at 25 MeV/nucleon and 50 MeV/nucleon. The fact that the model prefers less dissipative reactions, where the QP and the QT stay too much similar to the original projectile and target, might be related to the NN cross section or to the clustering and inter-clustering process. A possible optimization of these parameters within AMD to better reproduce also light systems with this code is foreseen.

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Primary author(s) : Prof. BARLINI, Sandro (Dipartimento di Fisica ed Astronomia Università di Firenze)

Co-author(s) : Dr. BALDESI, Lucia (Dipartimento di Fisica ed Astronomia Università di Firenze)

Presenter(s) : Dr. BALDESI, Lucia (Dipartimento di Fisica ed Astronomia Università di Firenze)

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