

Carbon stories in calcium

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Abstract

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A sample history was followed step-by-step in a FLUKA simulation of 400 MeV/nucleon carbon-12 ions started in an effectively infinite calcium (of natural isotopic composition) medium. From this single history, 5373 collisions comprising 15 different particle types were found. Heavy ion interactions were observed in addition to nuclear reactions and electromagnetic showers. The spatial tracks of the ion source and all subsequent secondaries are annotated with the respective interaction type. Energy, momentum, mass number and atomic number balance-sheets are presented. This sample history is then put into the wider statistical context of the remaining histories. The work showcases the analog and correlated Monte Carlo simulation not available in some other codes.