

Measurement of Nuclear Fragmentation Cross Sections with NA61/SHINE for a better understanding of the Propagation of Cosmic-Ray Nuclei in the Galaxy

Executive Summary



Neeraj Amin for the NA61/SHINE Collaboration

Institute for Astroparticle Physics, Karlsruhe Institute of Technology, Karlsruhe, Germany



July 6, 2021

What is this contribution about?

Measuring nuclear fragmentation cross sections with NA61/SHINE experiment at CERN

Why is it relevant/interesting?

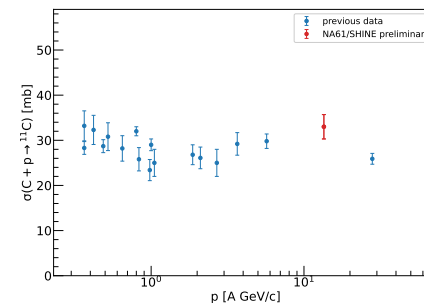
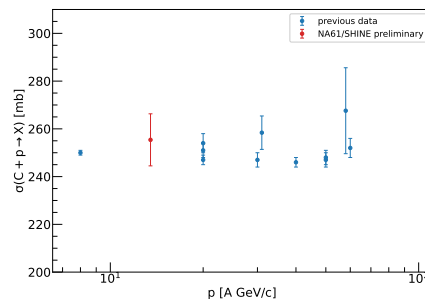
Precision laboratory measurements of fragmentation cross section values are essential to reduce currently estimated uncertainties on cosmic ray propagation models in the Galaxy.

What has been done?

The Carbon mass-changing cross section and the ^{11}C production cross section are measured from the pilot run fragmentation data taken in 2018, for the C+p reaction at 13.5 A GeV/c with a Polyethylene and Graphite target.

What is the result?

Below are the results from the pilot run on C+p→X(left figure) and C+p→ ^{11}C (right figure)



These preliminary results demonstrate the capabilities of the NA61/SHINE experiment to measure fragmentation cross sections at high energy. It is planned to collect a much larger data set in 2022.