A study of nuclear stopping in central collisions at intermediate energies

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Nuclear stopping has been investigated in central nuclear collisions at intermediate energies by analysing kinematically complete events recorded with the help of the 4π multidetector INDRA for a large variety of symmetric systems. It is found that the mean isotropy ratio defined as the ratio of transverse to parallel momenta (energies) reaches a minimum near the Fermi energy, saturates or slowly increases depending on the mass of the system as the beam energy increases and then stays lower than unity, showing that significant stopping is not achieved even for the heavier systems. Close to and above the Fermi energy, experimental data show no effect of the isospin content of the interacting system. The role of isospin diffusion in an experiment performed at GANIL with ^{124,136}Xe projectiles on ^{112,124}Sn targets is also discussed. Results suggest a strong memory of the entrance channel above 20 AMeV/A (nuclear transparency) and, as such, constitute valuable tests of the microscopic transport models.