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物理

ΔE-E望远镜在^{9}C碎裂反应上的应用

金仕纶[1,2];王建松[1];王猛[1];胡正国[1];张雪荧[1];陈若富[1];王琦[1];陈志强[1];黄美容[1,2];郑川[1];杨彦云[1];严鑫帅[1];袁小华[1];韩建龙[1];马朋[1];付芬[1];胡强[1]

1.中国科学院 近代物理研究所，甘肃 兰州730000 2.中国科学院 研究生院，北京100049

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摘要 为研究^{9}C的晕核结构，一套ΔE-E望远镜探测器应用在兰州放射性次级束流线（RIBLL）上进行的^{9}C碎裂反应实验中，用来测量反应中产生的碎片。为解决ΔE-E望远镜中硅条的干扰问题及硅条和CsI的能量刻度，利用硅条的感应信号对重离子在硅条上产生的饱和信号进行能量刻度，并通过模拟程序与事例得到的刻度点对 CsI（Tl）晶体进行能量刻度。同时使用在硅条和CsI（Tl）晶体上的位置信息对反应物径迹进行重建，从而得到同一离子在硅条与CsI（Tl）晶体上信号的符合，并得到了最终的有效物理事件。

关键词

ΔE-E望远镜 硅条饱和信号 CsI（Tl）晶体刻度 径迹拟合

分类号

Application of ΔE-E Telescope in ^{9}C Fragmentation Reaction

Shi-lun[1,2];WANG Jian-song[1];WANG Meng[1];HU Zheng-guo[1];ZHANG Xue-ying[1];CHEN Ruo-fu[1];WANG Qi[1];CHEN Zhi-qiang[1];HUANG Mei-rong[1,2];ZHENG Chuan[1];YANG Yan-yun[1];YAN Xin-shuai[1];YUAN Xiao-hua[1];HAN Jian-long[1];MA Peng[1];FU Fen[1];HU Qiang[1]

1.Institute of Modern Physics, Chinese Academy of Sciences, Lanzhou 730000, China; 2.Graduate University of Chinese Academy of Sciences, Beijing 100049, China

Abstract For studying the halo structure of ^{9}C, a set of ΔE-E telescope detector was applied in the experiment of ^{9}C fragmentation reaction carried out at the facility of Radio active Ion Beam Line in Lanzhou (RIBLL). The detector was used to measure the fragments produced in the reaction. The principal aim is to solve the crosstalk between silicon strips and the energy calibration of silicon strip and CsI(Tl) crystal. Using the induced signal of the saturated signal produced by heavy ion punching through the silicon strip, the deposited energy was calibrated. Combining the simulated result and experimental data, a series of energy points were obtained to calibrate the CsI(Tl) crystal. The ion track was reconstructed by position information both in silicon strip and in CsI(Tl) crystal which were coincident with each other for one ion. Finally, the real physics event was obtained.

Key words ΔE-E telescope detector saturated signal of Si strip CsI(Tl) crystal calibration track reconstruction

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