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# 重离子弹性散射中的角分散研究

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摘要

简要评述了重离子弹性散射角分散研究的内容、 方法及物理意义。 通过前角区重离子弹性散射产物微分截面的角分布测量，作出角分散图ln(dσ/dθ)\|θ2。 分析经典偏转函数， 从而在实验上确定了反应系统的核虹角。 在低能、 重靶的重离子反应系统中， 核虹角远小于擦边角。 晕核及弱束缚核比稳定核具有更小的核虹角和更大的核相互作用范围。 经典偏转函数的计算有助于提供一套光学势参数， 以便于拟合弹性散射产物的微分截面。

In terms of the angular dispersion plot of ln(dσ/dθ) versus θ2, which can be obtained from the angular distribution of the elastic scattering differential cross sections in heavy ion collisions, systematic analysis on the angular dispersions is made by using classical deflection function for the available experimental data on the target of 208Pb. Our systematic analyses bring about some important results. Firstly, there is an angular dispersion turning angle at forward angular range beyond the grazing angle. Secondly, the nuclear rainbow angle for such reaction systems can be determined by measuring differential cross sections of elastic scattering at forward angular range and analyzing the angular dispersion. Thirdly, analysis of angular dispersion may provide a way to determine a set of optical potential parameters by means of fitting the experimental data of elastic scattering differential cross sections. Finally, for the halo nuclei as the projectiles, there is an exotic behaviour, i. e., smaller angular dispersion turning angle.

关键词　重离子弹性散射； 角分散； 经典偏转函数； 核虹角

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