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Document Title : *Alpha Particle Elastic Scattering From Some Nuclei AT 240MeV*

استطارة جسيم ألفا المرنة من بعض الأنوية عند الطاقة ٢٤٠ م أف

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Abstract : elastic scattering data at 240 MeV within the framework of Coulomb modified Glauber multiple scattering theory. The main feature of the present study is the use of an effective N-? amplitude with effectively one adjustable parameters instead of the generally used N-? elastic scattering amplitude in the usual rigid projectile model (RPM) for the evaluation of the Glauber amplitude. By using the parameters of effective N-? amplitude at energy one fourth of the energy of the incident alpha particle from N-? scattering experiments we obtained a very good fit to the elastic ?- 58Ni scattering data at 240 MeV by varying effectively one adjustable parameter . It is also found that the same amplitude reproduces the ?- 116Sn and ?- 197Au elastic scattering data at 240 MeV fairly well. There are some small quantitative difference between our parameter free calculation and the experiment at higher angles specially for 197Au nucleus. It is to be noted here that, the same discrepancy is also visible in the six parameter optical model analysis by Clark et al. (1995). This discrepancy we suspect may be due to some weak mass dependence in parameter of effective N-? amplitude though our results with average parameter values of N-? amplitude prefere a little higher value of slope parameter than those determined from N-? scattering experiments. Finally, on the whole we found that the effective N-? amplitude method of analysis of elastic ?- nucleus scattering data is quite encouraging and works reasonably well even at low energy

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