studies on the theory of scattering of fast particles

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This thesis is concerned with calculations, of hi-gh energy electron scattering such as elastic scat-tering form factor, elastic and inelastic scattering differential Dross sections for N = Z even - even nucl-ei in the 1p - shell and 20 - ld shell. In these calcul-ations, different model densities for the - cluster structures : spherical, spheroidal and axially symmetric distributions, have been used. These density distribut:-.) ions are expanded in terms of.the spherioal harmoino fu-notions, the modified Bessel functions and the Legendre polynomial.A survey on the of - cluster model, elastic scatte ring form factor and both elastic and inelastic differ-ential cross sections, is given in chapter I.In chapter II, general expramdals for the root mean square radius of the oC- cluster and of different nuclei are established, corresponding to the different density distributions. Also general formulae of the high energy electron elastic scattering form factor, for the nuclei120,160,16we,24m8,28si ,32S and 400a are given for the different density distributions.General formulae of the elastic and inelastic (2+-level) scattering differential cross sections are givenin chapter III for the nuclei, 120,24.Mg$Si and 326 f taking into account the different density distributions, mentioned before .In chapter IV, the discussion and conclusion of the results are given . The agreement between the theoretical results and the corresponding experimental data shows that the K.- cluster model is still successful and lively model.