

Abstract Submitted  
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**Microscopic theory of incorporating resonances in the mean field**

M.S. SABRA, F.B. MALIK, Southern Illinois University, Carbondale, IL — Starting from a many body Hamiltonian, containing one and two body operators, a microscopic theory has been developed to incorporate resonances in the mean field for the scattering theory. The results for the elastic scattering will be presented. It indicates that the structure of the S-matrix obtained differs from some of the theories applied on an ad hoc way to describe elastic scattering. The derived theory has been applied to  $\alpha - \alpha$  scattering in the energy range 35.0-40.0 MeV (lab), where the phase shift analysis indicates a sudden jump, thereby implying the occurrence of a resonance. The data has been analyzed by incorporating resonance term in the mean field which has its roots in the energy-density functional approach. This leads to improvement of the fits to the data. This analysis will be compared to the analysis obtained by the methods where a resonance term is usually added on an ad hoc way to the optical potential.

M.S. Sabra  
Southern Illinois University, Carbondale, IL

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