

Spin fluctuation theory for itinerant magnetism and introduction to the physics of the Kondo effect

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1. Spin fluctuation theory for itinerant magnetism

The Hubbard model

The Stoner theory and the ferromagnetic state

The dynamical spin susceptibility in the random phase approximation (RPA)

Individual versus collective excitations

The self-consistent renormalized-spin fluctuation (SCR-SF) theory

2. Introduction to the physics of the Kondo effect

The Anderson model

The Schrieffer-Wolff transformation

The Kondo model

Perturbation theory

Beyond Perturbation theory

Poor man's scaling

The Renormalization Group

Textbooks (and references within)

1. S. Doniach and E.H. Sondheimer, Green's Functions for Solid State Physicists, Frontiers in Physics, W.A. Benjamin 1974
2. A.C. Hewson, The Kondo Problem to Heavy Fermions, Cambridge University Press 1993
3. H. Bruus et K. Flensberg, Many-Body Quantum Theory in Condensed Matter Physics, An Introduction, Oxford University Press 2004

Tutorial

Formation of localized moments in the Anderson model (inspired from the article P.W. Anderson Phys. Rev. **124**, 41 1961)