

# Exchange and ordering – Localized and band magnetism

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- 1- **Origin of exchange**  
interplay between Coulomb repulsion and Pauli principle.  
Intra- and inter-atomic exchange
- 2- **Exchange interactions in insulators**  
Origin of superexchange  
Goodenough-Kanamori rules
- 3- **Exchange in metals**  
RKKY interactions  
Double exchange  
Band magnetism
- 4- **Magnetic ordering**  
Different types of orderings  
Role of dimensionality : 1D/2D/3D systems  
Classical versus quantum spins

## Reference books :

- R. Skomski, Simple models of magnetism (Oxford – 2008)
- S. Blundell, Magnetism in Condensed matter (Oxford – 2001)
- J. Stöhr and H.C. Siegmann, Magnetism (Springer – 2006)
- P. Mohn, Magnetism in the solid state (Springer- 2006)

## Other books (more difficult) :

- K. Yosida, Theory of magnetism (Springer- 1996)
- P. Fazekas, Electron correlation and Magnetism (World scientific – 1999)