

ESM Magnetism School

Exchange and Ordering (3 hours)

Stephen J. Blundell
University of Oxford

- The exchange interaction and exchange symmetry.
- Types of exchange interaction including direct, indirect and superexchange.
- The Goodenough-Kanamori rules.
- Types of ferromagnetic and antiferromagnetic systems with localized moments, and systems that undergo magnetic frustration.
- Magnetic ordering as a broken symmetry state.
- Simple excitations in magnetic systems (magnons) and the Mermin-Wagner theorem.
- The RKKY interaction in metals and the magnetism of metals. Pauli paramagnetism and Stoner excitations.