

Lecture 10: Experimental Tests of Band Structure and a Survey of the Periodic Table

Various tests of band calculations are described, starting from specific heat coefficient and spin susceptibility as measurements of the density of states at the Fermi level. Optical absorption and van Hove singularities are discussed. Photoemission and angle resolved photoemission (ARPES) are discussed in some detail. A brief survey of the band structures of various parts of the periodic table is given, starting from simple and noble metals to divalent and trivalent metals. Examples of transition metal bandstructures are shown, with emphasis on the role of the d bands. The rare earth is discussed with emphasis on the strong correlation nature of the $4f$ states.

Reading: Mardar 23.6.2, 10.4