

Polarized Electrons at Surfaces
by J. Kirschner

Because of recent technological advances, the spin of free electrons is being used to a much greater extent to probe physical phenomena. Nowhere has this growth in usage been greater than in the area of surface physics. "Polarized Electrons at Surfaces" presents a discussion of research in this area, which has been growing rapidly for about a decade.

The book, Volume 106 of the Springer Tracts in Modern Physics, begins by giving a short introduction to the nomenclature of electron polarization and discussions of the spin-orbit and exchange interactions, which account for almost all the spin dependent effects currently being studied. Practical sources and detectors for polarized electrons are then described. The remainder of the book is divided into two parts; the first deals with experiments on non-magnetic crystals, where spin-orbit effects are investigated, and the second with studies of magnetic materials where the exchange interaction can be observed. The treatment is result oriented with simple physical explanations substituting for detailed derivations and pages of equations.

The problem with using this book as a summary of a field of research lies in its origin having been based on the author's "Habilitationsschrift", a work intended to demonstrate the writer's advanced standing in a research field. Too many of the examples are drawn from the author's own work and the level of treatment of various subtopics reflects more the accomplishments of the author, as expected in a "Habilitationsschrift", than the actual research activity in the field, as the reader would hope for in a general treatment. Still, a lot of territory is covered and the interested reader can fill in the gaps by using the references provided.

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