Abstract. In this workshop talks on discrete spectra, including Lieb-Thirring estimates and properties of resonances were presented. The connection between continuous and discrete spectra was discussed. Various characteristics of continuous spectra in the context of random or magnetic operators were investigated. The Liouville Theorem, the problem of absolute continuity, and the classical problem of homogenization for periodic operators were treated.

Mathematics Subject Classification (2000): 35xx, 46xx, 47xx, 81xx.

Introduction by the Organisers

The goal of the workshop was to bring together specialists working in various branches of spectral theory with applications to solid state physics, superconductivity, quantum mechanics etc. The meeting was attended by more than 45 participants from Europe, Japan, Russia, South America and US. During the five days 26 talks were delivered. A special care was taken that apart from the recognized experts in the field, young participants also had an opportunity to speak about their results. The Wednesday morning session, preceding the traditional afternoon hike, consisted of talks of survey nature, which was appreciated by all.

There were several major themes in the workshop. One was the study of discrete spectra, including Lieb-Thirring estimates, properties of resonances. A substantial number of talks was concerned with the connection between the continuous and discrete spectra. These include, in particular, the study of the so-called trace formulas. The investigation of various characteristics of the continuous spectra (e.g. density of states, spectral shift function) was featured in a number of talks in the
context of random or magnetic operators. A variety of new results were also reported on the theory of periodic operators. They concerned the Liouville Theorem, the problem of absolute continuity, and the classical problem of homogenization.

A relatively low number of talks gave the participants an opportunity for discussions in small groups outside the scheduled lecture time. It is hoped that these contacts will result in further collaboration.

It is our pleasure to thank the administration and staff of the Mathematisches Forschungsinstitut Oberwolfach for creating comfortable and genuinely inspiring atmosphere, which facilitated the work of the organisers and contributed to the success of the workshop.