Lablée, Olivier   *****   **1328.53001**

Spectral theory in Riemannian geometry.

EMS Textbooks in Mathematics. Zürich: European Mathematical Society (EMS) (ISBN 978-3-03719-151-4/hbk). ix, 187 p. EUR 38.00 (2015).

This book gives a self-contained introduction to spectral geometry on compact Riemannian manifolds. The reader is assumed to have a good grounding in functional analysis.

Chapter 2 presents the fundamental notions of spectral theory for compact and unbounded operators. In Chapter 3 the author introduces some fundamental notions of Riemannian geometry and analysis on manifolds. In Chapter 4 the author proves that the Laplace-Beltrami operator on a compact Riemannian manifold is self-adjoint with a discrete spectrum and also presents a minimax principle for the Laplacian. Chapter 5 discusses principles underlying the treatment of direct problems of spectral geometry, including some exact computations of spectrum. In Chapter 6 the author presents a topological perturbation result for eigenvalues of a manifold. Chapter 7 is devoted to inverse problems in spectral geometry. In particular the author introduces briefly some results of conformal geometry in dimension 2 and 3.

This book contains 30 exercises in functional analysis and Riemannian geometry and also 15 interesting examples. The bibliography consists of 128 titles. The subject index is included.

This book is warmly recommended to specialists in mathematics and physics and especially to PhD students interested in the topic.   *Jan Kurek (Lublin)*