1. Record Nr. UNINA9910133761003321

Autore	Elizalde E
Titolo	Ten physical applications of spectral zeta functions / / Emilio Elizalde
Pubbl/distr/stampa	Heidelberg ; ; New York, : Springer, 2012
ISBN	3-642-29405-7
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (XIV, 227 p. 14 illus.)
Collana	Lecture notes in physics, , 0075-8450 ; ; v. 855
Disciplina	530.1/5556
Soggetti	Functions, Zeta Mathematical physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references (p. 215-223) and index.
Nota di contenuto	Introduction and Outlook -- Mathematical Formulas Involving the Different Zeta Functions -- A Treatment of the Non-Polynomial Contributions: Application to Calculate Partition Functions of Strings and Membranes -- Analytical and Numerical Study of Inhomogeneous Epstein and Epstein-Hurwitz Zeta Functions -- Physical Application: the Casimir Effect -- Five Physical Applications of The Inhomogeneous Generalized Epstein-Hurwitz Zeta Functions -- Miscellaneous Applications Combing Zeta With Other Regularization Procedures -- Applications to Gravity, Strings and P-Branes -- Eleventh Application: Topological Symmetry Breaking in Self-Interacting Theories -- Twelfth Application: Cosmology and The Quantum-Vacuum -- References -- Index.
Sommario/riassunto	Zeta-function regularization is a powerful method in perturbation theory. This book is meant as a guide for the student of this subject. Everything is explained in detail, in particular the mathematical difficulties and tricky points, and several applications are given to show how the procedure works in practice (e.g. Casimir effect, gravity and string theory, high-temperature phase transition, topological symmetry breaking, noncommutative spacetime). The formulas some of which are new can be used for physically meaningful, accurate numerical calculations. The book is to be considered as a basic introduction and a collection of exercises for those who want to apply this regularization procedure in practice. This thoroughly revised, updated and expanded

edition includes in particular new explicit formulas on the general quadratic, Chowla-Selberg series case, an interplay with the Hadamard calculus, and features a new chapter on recent cosmological applications including the calculation of the vacuum energy fluctuations at large scale in braneworld and other models.