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	Nota di contenuto	Preface -- The dwelling of the spectral action -- The toolkit for computations -- Analytic properties of spectral functions -- Fluctuations of the spectral action -- Open problems -- Classical tool from geometry and analysis -- About "heat operators -- Definition of pdos, Sobolev spaces and a few spectral properties -- Complex parameter-dependent symbols and parametrix -- About e-t P as a pdo and about its kernel -- The small-t asymptotics of e-t P -- Meromorphic extensions of certain series and their residues -- Examples of spectral triples -- Spheres -- Tori -- Noncommutative tori

Sommario/riassunto	What is spectral action, how to compute it and what are the known examples? This book offers a guided tour through the mathematical habitat of noncommutative geometry à la Connes, deliberately unveiling the answers to these questions. After a brief preface flashing the panorama of the spectral approach, a concise primer on spectral triples is given. Chapter 2 is designed to serve as a toolkit for computations. The third chapter offers an in-depth view into the subtle links between the asymptotic expansions of traces of heat operators and meromorphic extensions of the associated spectral zeta functions. Chapter 4 studies the behaviour of the spectral action under fluctuations by gauge potentials. A subjective list of open problems in the field is spelled out in the fifth Chapter. The book concludes with an appendix including some auxiliary tools from geometry and analysis, along with examples of spectral geometries. The book serves both as a compendium for researchers in the domain of noncommutative geometry and an invitation to mathematical physicists looking for new concepts.