1. Record Nr. UNISALENTO991003531769707536

Autore	Gesztesy, Fritz
Titolo	The Callias index formula revisited [e-book] / Fritz Gesztesy, Marcus Waurick
ISBN	9783319299778 3319299778
Descrizione fisica	1 online resource (ix, 192 pages) : illustration
Collana	Lecture notes in mathematics, 0075-8434 ; 2157
Classificazione	AMS 47-02 LC QA614.92
Altri autori (Persone)	Waurick, Marcusauthor
Disciplina	514.74
Soggetti	Index theorems Differential equations, Partial
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index
Nota di contenuto	Introduction.-Notational Conventions ; Functional Analytic ; On Schatten-von Neumann Classes and Trace Class ; Pointwise Estimates for Integral Kernels ; Dirac-Type ; Derivation of the Trace Formula ; The Trace Class Result ; Derivation of the Trace Formula ; Diagonal Estimates ; The Case n = 3 ; The Index Theorem and Some Consequences -- Perturbation Theory for the Helmholtz Equation ; The Proof of Theorem 10.2: The Smooth Case ; The Proof of Theorem 10.2: The General Case ; A Particular Class of Non-Fredholm Operators L and Their Generalized Witten Index ; A: Construction of the Euclidean Dirac Algebra ; B: A Counterexample to [22, Lemma 5] ; References ; Index
Sommario/riassunto	These lecture notes aim at providing a purely analytical and accessible proof of the Callias index formula. In various branches of mathematics (particularly, linear and nonlinear partial differential operators, singular integral operators, etc.) and theoretical physics (e.g., nonrelativistic and relativistic quantum mechanics, condensed matter physics, and quantum field theory), there is much interest in computing Fredholm indices of certain linear partial differential operators. In the late 1970's, Constantine Callias found a formula for the Fredholm index of a particular first-order differential operator (intimately connected to a supersymmetric Dirac-type operator) additively perturbed by a

potential, shedding additional light on the Fedosov-Hörmander Index Theorem. As a byproduct of our proof we also offer a glimpse at special non-Fredholm situations employing a generalized Witten index