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Sommario/riassunto	This book presents original research results on pseudodifferential operators. C^* -algebras generated by pseudodifferential operators with piecewise smooth symbols on a smooth manifold are considered. For each algebra, all the equivalence classes of irreducible representations are listed; as a consequence, a criterion for a pseudodifferential operator to be Fredholm is stated, the topology on the spectrum is described, and a solving series is constructed. Pseudodifferential operators on manifolds with edges are introduced, their properties are considered in details, and an algebra generated by the operators is studied. An introductory chapter includes all necessary preliminaries from the theory of pseudodifferential operators and C^* -algebras.