The occurrence of singularities is pervasive in many problems in topology, differential geometry and algebraic geometry. This book concerns the study of singular spaces using techniques from a variety of areas of geometry and topology and interactions among them. It contains more than a dozen expository papers on topics ranging from intersection homology, $L^2$ cohomology and differential operators, to the topology of algebraic varieties, signatures and characteristic classes, mixed Hodge theory, and elliptic genera of singular complex and real algebraic varieties. The book concludes with a list of open problems.
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