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Sommario/riassunto This book serves as a complementary resource to the courses "Advanced structural optimization" and "Structural optimization in automotive engineering" taught by the author at the University of Siegen, North-Rhine-Westphalia, Germany since 2001. Focusing on optimization problems in the field of structural engineering, this book offers a rigorous and analytical approach to problem-solving. Each chapter of the book begins with a brief overview of classical results and the derivation of governing equations. The solutions to optimization problems are then presented in a closed form, with the author guiding readers through several analytical methods for solving stability and contact tasks. Throughout the book, the author takes care to ensure that even readers without extensive experience in numerical

computations can understand the conclusion of each relation. The book features several basic optimization problems, selected from a large pool of previously solved problems, with a particular emphasis on the unique features of optimization problems. By presenting analytical solutions, readers can better understand other known optimization problems and gain the skills needed to independently set and solve new problems. With its comprehensive and rigorous approach to problem-solving, this book is sure to enhance the reader's understanding of the field and equip them with the skills needed to tackle new challenges. .