1. Record Nr. UNINA9910484745603321

Autore	Odehnal Boris
Titolo	The Universe of Quadrics / / by Boris Odehnal, Hellmuth Stachel, Georg Glaeser
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2020
ISBN	3-662-61053-1
Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (VIII, 606 p. 1 illus.)
Disciplina	516.5
Soggetti	Geometry Applied mathematics Engineering mathematics Applications of Mathematics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	1 Introduction -- 2 Quadrics in Euclidean 3-space -- 3 Linear algebraic approach to quadrics -- 4 Projective and affine quadrics -- 5 Pencils of quadrics -- 6 Cubic and quartic space curves as intersections of quadrics -- 7 Confocal quadrics -- 8 Special problems -- 9 Quadrics and Differential Geometry -- 10 Line Geometry, Sphere Geometry, Kinematics -- 11 Some generalizations of quadrics -- References -- Index.
Sommario/riassunto	The Universe of Quadrics This text presents the theory of quadrics in a modern form. It builds on the previously published book "The Universe of Conics", including many novel results that are not easily accessible elsewhere. As in the conics book, the approach combines synthetic and analytic methods to derive projective, affine, and metrical properties, covering both Euclidean and non-Euclidean geometries. While the history of conics is more than two thousand years old, the theory of quadrics began to develop approximately three hundred years ago. Quadrics play a fundamental role in numerous fields of mathematics and physics, their applications ranging from mechanical engineering, architecture, astronomy, and design to computer graphics. This text will be invaluable to undergraduate and graduate mathematics students, those in adjacent fields of study, and anyone with a deeper

interest in geometry. Complemented with about three hundred fifty figures and photographs, this innovative text will enhance your understanding of projective geometry, linear algebra, mechanics, and differential geometry, with careful exposition and many illustrative exercises. The Authors Boris Odehnal, born in 1973, got his PhD and habilitation in geometry at the Vienna University of Technology. 2011–2012 professor at the Dresden University of Technology. Since 2012, he has held the position of senior lecturer in geometry at the University of Applied Arts Vienna. He is the author of several dozens of publications on geometry. Hellmuth Stachel, born in 1942, got his PhD and habilitation in geometry in Graz. In 1978, he became full professor at the Mining University Leoben, and from 1980–2011, he was full professor of geometry at the Vienna University of Technology. He has coauthored several books on mathematics and computational geometry and more than 160 articles on geometry. Georg Glaeser, born in 1955, got his PhD and habilitation in geometry at the Vienna University of Technology. Since 1998, he is full professor of geometry at the University of Applied Arts Vienna. He is the author and coauthor of more than twenty books on geometry, mathematics, computational geometry, computer graphics, and photography.