

1. Record Nr.	UNINA9910786530203321
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Titolo	Topics in quaternion linear algebra // Leiba Rodman
Pubbl/distr/stampa	Princeton, New Jersey ; ; Oxfordshire, England : , : Princeton University Press, , 2014 ©2014
ISBN	1-4008-5274-9
Edizione	[Course Book]
Descrizione fisica	1 online resource (379 p.)
Collana	Princeton Series in Applied Mathematics
Classificazione	SK 230
Disciplina	512/.5
Soggetti	Algebras, Linear Quaternions
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front matter -- Contents -- Preface -- Chapter One. Introduction -- Chapter Two. The algebra of quaternions -- Chapter Three. Vector spaces and matrices: Basic theory -- Chapter Four. Symmetric matrices and congruence -- Chapter Five. Invariant subspaces and Jordan form -- Chapter Six. Invariant neutral and semidefinite subspaces -- Chapter Seven. Smith form and Kronecker canonical form -- Chapter Eight. Pencils of hermitian matrices -- Chapter Nine. Skewhermitian and mixed pencils -- Chapter Ten. Indefinite inner products: Conjugation -- Chapter Eleven. Matrix pencils with symmetries: Nonstandard involution -- Chapter Twelve. Mixed matrix pencils: Nonstandard involutions -- Chapter Thirteen. Indefinite inner products: Nonstandard involution -- Chapter Fourteen. Matrix equations -- Chapter Fifteen. Appendix: Real and complex canonical forms -- Bibliography -- Index
Sommario/riassunto	Quaternions are a number system that has become increasingly useful for representing the rotations of objects in three-dimensional space and has important applications in theoretical and applied mathematics, physics, computer science, and engineering. This is the first book to provide a systematic, accessible, and self-contained exposition of quaternion linear algebra. It features previously unpublished research results with complete proofs and many open problems at various levels,

as well as more than 200 exercises to facilitate use by students and instructors. Applications presented in the book include numerical ranges, invariant semidefinite subspaces, differential equations with symmetries, and matrix equations. Designed for researchers and students across a variety of disciplines, the book can be read by anyone with a background in linear algebra, rudimentary complex analysis, and some multivariable calculus. Instructors will find it useful as a complementary text for undergraduate linear algebra courses or as a basis for a graduate course in linear algebra. The open problems can serve as research projects for undergraduates, topics for graduate students, or problems to be tackled by professional research mathematicians. The book is also an invaluable reference tool for researchers in fields where techniques based on quaternion analysis are used.

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