1. Record Nr. UNISA996418184703316 Autore Lee Nam-Hoon Titolo Geometry: from Isometries to Special Relativity [[electronic resource] /] / by Nam-Hoon Lee Cham:,: Springer International Publishing:,: Imprint: Springer,, Pubbl/distr/stampa 2020 **ISBN** 3-030-42101-5 Edizione [1st ed. 2020.] Descrizione fisica 1 online resource (XIII, 258 p. 92 illus., 18 illus. in color.) Undergraduate Texts in Mathematics, , 0172-6056 Collana 516 Disciplina Soggetti Hyperbolic geometry Convex geometry Discrete geometry Mathematical physics Hyperbolic Geometry Convex and Discrete Geometry Theoretical, Mathematical and Computational Physics Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Nota di bibliografia Includes bibliographical references and index. Euclidean Plane -- Sphere -- Stereographic Projection and Inversions Nota di contenuto -- Hyperbolic Plane -- Lorentz-Minkowski Plane -- Geometry of Special Relativity -- Answers to Selected Exercises -- Index. Sommario/riassunto This textbook offers a geometric perspective on special relativity. bridging Euclidean space, hyperbolic space, and Einstein's spacetime in one accessible, self-contained volume. Using tools tailored to undergraduates, the author explores Euclidean and non-Euclidean geometries, gradually building from intuitive to abstract spaces. By the end, readers will have encountered a range of topics, from isometries to the Lorentz-Minkowski plane, building an understanding of how geometry can be used to model special relativity. Beginning with intuitive spaces, such as the Euclidean plane and the sphere, a

structure theorem for isometries is introduced that serves as a

throughout, the author offers readers an accessible pathway to

foundation for increasingly sophisticated topics, such as the hyperbolic plane and the Lorentz–Minkowski plane. By gradually introducing tools

visualizing increasingly abstract geometric concepts. Numerous exercises are also included with selected solutions provided. Geometry: from Isometries to Special Relativity offers a unique approach to non-Euclidean geometries, culminating in a mathematical model for special relativity. The focus on isometries offers undergraduates an accessible progression from the intuitive to abstract; instructors will appreciate the complete instructor solutions manual available online. A background in elementary calculus is assumed.