1. Record Nr. UNINA9910380739103321 Autore Rother Tom Titolo Sound Scattering on Spherical Objects / / by Tom Rother Cham:,: Springer International Publishing:,: Imprint: Springer,, Pubbl/distr/stampa 2020 3-030-36448-8 **ISBN** Edizione [1st ed. 2020.] Descrizione fisica 1 online resource (VIII, 262 p. 244 illus.) 534.2 Disciplina Acoustics Soggetti **Physics** Numerical analysis Computer science - Mathematics **Astrophysics** Particles (Nuclear physics) Quantum field theory Numerical and Computational Physics, Simulation **Numerical Analysis** Computational Science and Engineering Astrophysics and Astroparticles Elementary Particles, Quantum Field Theory Lingua di pubblicazione Inglese **Formato** Materiale a stampa Monografia Livello bibliografico Nota di contenuto Mathematical Basics of Plane Wave Scattering -- Scattering on Singleand Two-Layered Spheres -- Scattering on Janus Spheres -- Scattering on Homogeneous Bispheres -- Literature. Sommario/riassunto This book introduces readers to scattering from a practical/numerical point of view. The focus is on basic aspects like single scattering, multiple scattering, and whether inhomogeneous boundary conditions or inhomogeneous scatterers have to be taken into account. The powerful T-matrix approach is explained in detail and used throughout the book, and iterative solution methods are discussed. In addition, the

book addresses appropriate criteria for estimating the accuracy of numerical results, as well as their importance for practical applications.

Python code is provided with each chapter, and can be freely used and modified by readers. Moreover, numerous scattering results for different configurations are provided for benchmarking purposes. The book will be particularly valuable for those readers who plan to develop their own scattering code, and wish to test the correct numerical implementation of the underlying mathematics.