

1. Record Nr.	UNINA9910495213403321
Autore	Gan Woon Siong
Titolo	Time reversal acoustics // Woon Siong Gan
Pubbl/distr/stampa	Gateway East, Singapore : , : Springer, , [2021] 2021
ISBN	981-16-3235-9
Edizione	[1st ed. 2021.]
Descrizione fisica	1 online resource (XIV, 107 p. 15 illus., 10 illus. in color.)
Disciplina	534
Soggetti	Sound-waves
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Symmetry Properties of Acoustic Fields-Time Reversal Symmetry, Reciprocity Theorem -- Time Reversal Acoustics-Helmholtz Wave Equation has both Right Travelling and Left Travelling Wave Solutions -- Time Reversal gives rise to Superresolution -- Application to Nondestructive Evaluation – Experimental Setup and Case Studies -- Application to Medical Ultrasound Imaging -- Application to Underwater Acoustics -- Time Reversal Acoustics and Underwater Communication Technology -- Time Reversal Acoustics and Metamaterials -- Signal Processing -- Conclusions.
Sommario/riassunto	This book highlights time reversal acoustics, techniques based on the symmetry properties of acoustic fields. It has the unique feature that the first eleven chapters of the book are on the indepth studies of the theories of time reversal acoustics. The remaining chapters are on the four major applications of time reversal acoustics, together with their experimental setups and case studies: underwater communication, seismic exploration,nondestructive evaluation, and medical ultrasound imaging.. The gauge invariance approach to acoustic fields, proposed by the author in 2007, is confirmed by the successful fabrication of acoustical metamaterials and the applications of time reversal acoustics to superresolution. The book also presents groundbreaking applications of time reversal acoustics to underwater communication technology and the application of metamaterials to time reversal acoustics.

