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Titolo	Gauge Invariance Approach to Acoustic Fields // by Woon Siong Gan
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ISBN	981-13-8751-6
Edizione	[1st ed. 2019.]
Descrizione fisica	1 online resource (179 pages) : illustrations
Disciplina	530.1435
Soggetti	Acoustical engineering Materials science Acoustics Mechanics Mechanics, Applied Solid state physics Engineering Acoustics Characterization and Evaluation of Materials Solid Mechanics Solid State Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- History of Gauge Theory -- Coordinate Systems as the Framework of Equations -- Gauge Fields -- Covariant Derivative in Gauge Theory -- Lie Groups -- Global Gauge Invariance -- Local Gauge Invariance -- Gauge Fixing -- Noether's Theorem -- Spontaneous Symmetry Breaking and Phonon as the Goldstone Mode -- Time Reversal Acoustics and Super resolution -- Negative Refraction, Acoustical Metamaterials , and Acoustical Cloaking -- New Acoustics based on Metamaterials.
Sommario/riassunto	This book highlights the symmetry properties of acoustic fields and describes the gauge invariance approach, which can be used to reveal those properties. Symmetry is the key theoretical framework of metamaterials, as has been demonstrated by the successful fabrication of acoustical metamaterials. The book first provides the necessary theoretical background, which includes the covariant derivative, the

vector potential, and invariance in coordinate transformation. This is followed by descriptions of global gauge invariance (isotropy), and of local gauge invariance (anisotropy). Sections on time reversal symmetry, reflection invariance, and invariance of finite amplitude waves round out the coverage. .
