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Titolo	Asymptotic models of fields in dilute and densely packed composites [[electronic resource] /] / A.B. Movchan, N.V. Movchan, C.G. Poulton
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Altri autori (Persone)	MovchanN. V (Nataliya V.) PoultonC. G (Chris G.)
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 185-188) and index.
Nota di contenuto	Contents ; Preface ; Chapter 1 Long and close range interaction within elastic structures ; 1.1 Dilute composite structures. Scalar problems ; 1.1.1 An elementary example. Motivation ; 1.1.2 Asymptotic algorithm involving a boundary layer ; 1.1.2.1 Formulation of the problem 1.1.2.2 The leading-order approximation 1.1.2.3 Asymptotic formula for the energy ; 1.1.3 The dipole matrix ; 1.1.3.1 Definition of the dipole matrix ; 1.1.3.2 Symmetry of the dipole matrix ; 1.1.3.3 The energy asymptotics for a body with a small void 1.1.4 Dipole matrix for a 2D void in an infinite plane 1.1.5 Dipole matrices for inclusions ; 1.1.6 A note on homogenization of dilute periodic structures ; 1.2 Dipole fields in vector problems of linear elasticity

; 1.2.1 Definitions and governing equations
 1.2.2 Physical interpretation
 the elements of the dipole matrix
 ; 1.2.4 Examples ; 1.2.5 The energy equivalent voids
 ; 1.3 Circular elastic inclusions ; 1.3.1
 Inclusions with perfect bonding at the interface
 ; 1.3.2 Dipole tensors for imperfectly bonded inclusions
 1.3.2.1 Derivation of transmission conditions at the zero-thickness
 interface 1.3.2.2
 Neutral coated inclusions ; 1.4 Close-range
 contact between elastic inclusions ;
 1.4.1 Governing equations ; 1.4.2 Complex
 potentials ; 1.4.3 Analysis for two circular elastic
 inclusions
 1.4.4 Square array of circular inclusions

Sommario/riassunto

This monograph provides a systematic study of asymptotic models of continuum mechanics for composite structures, which are either dilute (for example, two-phase composite structures with small inclusions) or densely packed (in this case inclusions may be close to touching). It is based on the results of recent research and includes a comprehensive analysis of dipole and multipole fields associated with defects in solids. The text covers static problems of elasticity in dilute composites as well as spectral problems. Applications of the mathematical models included in the book are in damage me

2. Record Nr.	UNISALENTO991004268135307536
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