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Altri autori (Persone)	DamlamianAlain MiaraBernadette LiDaqian
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Nota di contenuto	Preface; Contents; Alain Damlamian An Introduction to Periodic Homogenization; 1 Introduction; 2 The main ideas of Homogenization; The three steps of Homogenization; 3 The model problem and three theoretical methods; 3.1 The multiple-scale expansion method; 3.2 The oscillating test functions method; 3.2.1 The proof of Theorem 3.4; 3.2.2 Convergence of the energy; 3.3 The two-scale convergence method; References; Alain Damlamian The Periodic Unfolding Method in Homogenization; 1 Introduction; 2 Unfolding in $L_p$ -spaces; 2.1 The unfolding operator $T$ ; 2.2 The averaging operator $U$ 2.3 The connection with two-scale convergence2.4 The local average operator $M$ ; 3 Unfolding and gradients; 4 Periodic unfolding and the standard homogenization problem; 4.1 The model problem and the standard homogenization result; 4.2 The Unfolding result: the case of strong convergence of the right-hand side; 4.3 Proof of Theorem 4.3; 4.4 The convergence of the energy and its consequences; 4.5 Some corrector results and error estimates; 4.6 The case of weak

convergence of the right-hand side; 5 Periodic unfolding and multiscales; 6 Further developments; References

Gabriel Nguetseng and Lazarus Signing Deterministic Homogenization of Stationary Navier-Stokes Type Equations1 Introduction; 2 Periodic homogenization of stationary Navier-Stokes type equations; 2.1 Preliminaries; 2.2 A global homogenization theorem; 2.3 Macroscopic homogenized equations; 3 General deterministic homogenization of stationary Navier-Stokes type equations; 3.1 Preliminaries and statement of the homogenization problem; 3.2 A global homogenization theorem; 3.3 Macroscopic homogenized equations; 3.4 Some concrete examples

4 Homogenization of the stationary Navier- Stokes equations in periodic porous media4.1 Preliminaries; 4.2 Homogenization results; References; Patricia Donato Homogenization of a Class of Imperfect Transmission Problems; 1 Introduction; 2 Setting of the problem and main results; 3 Some preliminary results; 4 A priori estimates; 5 A class of suitable test functions; 5.1 The test functions in the reference cell  $Y$ ; 5.2 The test functions in; 6 Proofs of Theorems 2.1 and 2.2; 6.1 Identification of  $1 + 2$ ; 6.2 Identification of  $1$  and  $2$  for  $-1 < < 1$ ; 6.3 Identification of  $u_2$

7 Proof of Theorem 2.4 (case  $> 1$ )7.1 A priori estimates; 7.2 Identification of  $1$ ; 7.3 Identification of  $2$ ; References; Georges Griso Decompositions of Displacements of Thin Structures; 1 Introduction; 2 The main theorem; 2.1 Poincar e-Wirtinger's inequality in an open bounded set star-shaped with respect to a ball; 2.2 Distances between a displacement and the space of the rigid body displacements; 3 Decomposition of curved rod displacements; 3.1 Notations; 3.2 Elementary displacements and decomposition; 4 Decomposition of shell displacements; 4.1 Notations and preliminary

4.2 Elementary displacements and decompositions

## Sommario/riassunto

The focus of this is on the latest developments related to the analysis of problems in which several scales are presented. After a theoretical presentation of the theory of homogenization in the periodic case, the other contributions address a wide range of applications in the fields of elasticity (asymptotic behavior of nonlinear elastic thin structures, modeling of junction of a periodic family of rods with a plate) and fluid mechanics (stationary Navier-Stokes equations in porous media). Other applications concern the modeling of new composites (electromagnetic and piezoelectric materials)

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