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""2.1 The Rescaling Group
Physical Objects
the Buckingham Pi Theorem
""2.1.3 Rescaling and Self-Similarity as a Lie Algebra
""; ""2.1.4 Practical Lie Self-Similarity
Familiar Physical Examples
""3.2.1 Self-Similar Lorentz Boost

""""2.1.1 Rescaling
""; ""2.1.2 Reconciliation with
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Autore	Bourlier Christophe
Titolo	Method of moments for 2d scattering problems : basic concepts and applications // Christophe Bourlier, Nicolas Pinel, Gildas Kubicke
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1.4.3. General case 1.4.4. Impedance boundary condition; 1.5. Forward-Backward (FB) method; 1.6. Random rough surface generation; 1.6.1. Statistical parameters; 1.6.2. Generation of a random profile; 1.6.3. Simulations; 1.6.4. Conclusion; Chapter 2. Validation of the Method of Moments for a Single Scatterer; 2.1. Introduction; 2.2. Solutions of a scattering problem; 2.3. Comparison with the exact solution of a circular cylinder in free space; 2.3.1. Solution of the Helmholtz equation; 2.3.2. Dirichlet boundary conditions; 2.3.3. Neumann boundary conditions; 2.3.4. Dielectric cylinder 2.3.5. MoM for an elliptical cylinder 2.3.6. Numerical comparisons for a circular cylinder; 2.3.7. Conclusion; 2.4. PO approximation; 2.4.1. Formulation; 2.4.2. Applications; 2.4.3. Sea-like surface; 2.5. FB method; 2.6. Conclusion; Chapter 3. Scattering from two Illuminated Scatterers; 3.1. Introduction; 3.2. Integral equations and method of moments; 3.2.1. Integral equations for two scatterers; 3.2.2. Method of moments for two scatterers; 3.2.3. Method of moments for P scatterers; 3.3. Efficient inversion of the impedance matrix: E-PILE method for two scatterers 3.3.1. Mathematical formulation 3.3.2. Numerical results; 3.4. E-PILE method combined with PO and FB; 3.4.1. E-PILE hybridized with FB; 3.4.2. E-PILE hybridized with PO; 3.5. Conclusion; Chapter 4. Scattering from two Scatterers Where Only one is Illuminated; 4.1. Introduction; 4.2. Integral equations and method of moments; 4.2.1. Integral equations; 4.2.2. Method of moments; 4.2.3. Case for which scatterer 2 is perfectly conducting; 4.2.4. Numerical results; 4.3. Efficient inversion of the impedance matrix: PILE method; 4.3.1. Mathematical formulation; 4.3.2. Numerical results 4.4. PILE method combined with FB or PO 4.4.1. PILE hybridized with FB; 4.4.2. PILE hybridized with PO; 4.5. Conclusion; Appendix. Matlab Codes; Bibliography; Index

Sommario/riassunto

Electromagnetic wave scattering from randomly rough surfaces in the presence of scatterers is an active, interdisciplinary area of research with myriad practical applications in fields such as optics, acoustics, geoscience and remote sensing. In this book, the Method of Moments (MoM) is applied to compute the field scattered by scatterers such as canonical objects (cylinder or plate) or a randomly rough surface, and also by an object above or below a random rough surface. Since the problem is considered to be 2D, the integral equations (IEs) are scalar and only the TE (transverse elect
