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An optimal perfectly matched layer method for multiple scattering problems. (Chinese. English summary) [Zbl 1463.74116]

Summary: An optimal perfectly matched layer (PML) method is proposed to solve the multiple scattering problems. The exterior domain is truncated to enclose each scatterer by a bounded domain individually, a particular absorbing function with unbounded integral in the truncated domain is chosen. The solution of the optimal PML problem is independent of the thickness of the PML absorbing layer because of the absorbing function with a little parameter. The numerical solution converges exponentially to solution of the original multiple scattering problems if the parameter is small enough.

MSC:
74S99 Numerical and other methods in solid mechanics
74J20 Wave scattering in solid mechanics

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multiple-scatter scattering; optimal PML method; exponential convergence

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