

1009-35-66

Bogdan G. Nita* (nitab@mail.montclair.edu), Department of Mathematical Sciences, 1 Normal Avenue, Upper Montclair, NJ 07043. *Analytic continuation of perturbative solutions of acoustic 1D wave equation by means of Padé Approximants.*

Perturbative solutions to the wave equation can be constructed using the forward scattering series. When it converges, the series describes the total wavefield everywhere in a given medium as propagations in a reference medium and interactions with point scatterers. For a 1D acoustic medium and a normal incidence plane wave, the series was shown to converge for a limited contrast between reference and actual velocities. Same restricted convergence was obtained for a visco-acoustic medium with or without dispersion. In this talk we introduce a method for extending the forward scattering solutions to any velocity contrast between the actual and the reference medium for both acoustic and visco-acoustic cases. The method involves the computation of a certain sequence of Padé approximations to the partial sums of the forward scattering series. We will discuss in detail the construction of the reflection coefficient of a single interface model using both the forward scattering series and the Padé Approximants schemes. (Received August 03, 2005)