

New series expansions for fundamental solutions of linear elastostatics in
2D

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Abstract

Abstract Series expansions of fundamental solutions are essential to algorithms and analysis of the null field method (NFM) and to analysis of the method of fundamental solutions (MFS). For linear elastostatics, new Fourier series expansions of FS are derived, directly from integration. The new expansions of the FS are simpler than those in Chen et al. (J Mech 26(3):393 - 401, 2010), thus facile to application in NFM and MFS. The new series expansions of FS in this paper are important to both theory and computation of linear elastostatics. Some computation of the MFS for linear elastostatics is provided, where the expansions of fundamental solutions are a basis tool in analysis. Numerical results of a simple example are reported, accompanied with error analysis.

Keyword : Elastostatics · Fundamental solutions · Expansions of fundamental solutions · Method of fundamental solutions · Null field method