Wang, X.; Schiavone, P.
Green's functions for an anisotropic elastic parabolic inhomogeneity under generalised plane strain deformations. (English) Zbl 07395790

Summary: On the basis of the Stroh sextic formalism, we propose a novel method to derive Green’s functions for a two-phase composite composed of an anisotropic elastic parabolic inhomogeneity perfectly bonded to an anisotropic elastic matrix. The composite is subjected to a line force and a line dislocation, which can be located anywhere inside or outside the inhomogeneity or on the parabolic interface itself. Explicit expressions describing the analytic vector function defined in the parabolic inhomogeneity are derived for each of the three aforementioned cases associated with the location of the line force and line dislocation. When the line dislocation is located inside the parabolic inhomogeneity, the image force acting on the line dislocation is expediently derived using the Peach-Koehler formula.

MSC:
74-XX Mechanics of deformable solids
35-XX Partial differential equations

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