

**A Whole-field Displacement from Partially Accessible Boundary's
Displacement Data: A Coupled FE-Analytical Approach**

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In providing a near-complete solution to a practical problem, combinations of various techniques have been employed extensively to complement data obtained from one another. Here, we propose and discuss a hybrid method - coupling FEA and an analytical method - to determine the whole-field displacement by employing displacement data from a partially accessible boundary. Employing displacement data retrieved from coarse-mesh FEA in conjunction with a method of solution formulated in terms of complex potentials, the HM evaluates the constants in the potential functions. Using these constants, the whole-field displacement is determined. The method is illustrated for few practical cases including plates with elliptical and circular holes, a bracket, a frame, a safety hook, and a crane hook. The evaluated displacement fields are corroborated with fine- mesh FE results.