Identification of internal cracks in a three-dimensional solid body via Steklov‑Poincaré approaches

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This work deals with the identification of internal planar cracks inside a three-dimensional elastic body, which is an ill posed Cauchy problem in the sense of stability, via two approaches relying on domain decomposition using overspecified elastostatic measurements. These approaches consist in recasting the problem in terms of primal or dual Steklov–Poincaré equations. Then we state the equivalence between the Steklov–Poincaré and Kozlov–Maz'ya–Fomin (KMF) formulations. The numerical performances of both approaches were tested and compared each to other and to The de Kozlov–Maz'ya–Fomin one.