

Title: Some geometric inverse problems in elasticity and thermoelasticity
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Abstract: This talk is devoted to a part of my research study on geometric inverse problems started with the study of the problem of crack detection in collaboration with Mohamed Jaoua. I present the mathematical analysis and numerical solutions of some geometric inverse problems in linear elasticity and thermoelasticity, namely the identification of fractures and cavities (with possibly multiple connected components) from overspecified boundary data. The overspecified data in such applications are boundary measurements of the displacement in case of linear elastic problem and both displacement and temperature in the thermoelastic case.

We develop a rather general approach for identifiability and local Lipschitz stability for such problems, and we present different methods for numerical resolution.