

ANALYSIS AND DIFFERENTIAL GEOMETRY
SEMINAR

*Direct and inverse problems for elastic dislocations in
geophysics*

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Abstract: I will discuss a model for dislocations in an elastic medium, modeling faults in the Earth's crust. The direct problem consists in solving a non-standard boundary value/interface problem for in-homogeneous, possibly anisotropic linear elasticity with piecewise-Lipschitz coefficients. The non-linear inverse problem consists in determining the fault surface and slip vector from displacement measurements made at the surface. In applications, these come from GPS arrays and satellite interferometry. We establish uniqueness for the inverse problem under some geometric conditions, using unique continuation results for systems. We also derive a shape derivative formula for an iterative reconstruction algorithm. This is joint work with Andrea Aspri (Milan University, Italy), Elena Beretta (NYU-Abu Dhabi), and Maarten de Hoop (Rice).

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MATHEMATICS
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