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Michael Hintermueller* (michael.hintermueller@uni-graz.at), University of Graz,
Mathematics and Scientific Computing, Heinrichstrasse 36, A-8010, Graz, Austria. *Electrical
impedance tomography: from topology to shape.*

Electrical impedance tomography is an imaging modality which aims at detecting hidden inclusions from electrical measurements by exploiting conductivity or permittivity properties of the hidden objects. In this talk, extended topological expansions of the solution of the underlying partial differential equation system are presented. These expansions provide information on the distribution (topology) of the objects within a surrounding medium. In a second step shape sensitivities are computed and both, topological derivatives and shape derivatives, are realized algorithmically. The talk ends by a report on numerical tests. (Received September 23, 2010)