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**Amir Moradifam\*** ([amir@math.toronto.edu](mailto:amir@math.toronto.edu)), 40 St. George st., Toronto, M5S2E4, and **Adrian Nachman** and **Alexandru Tamasan**, .. *Conductivity imaging from one interior measurement in the presence of perfectly conducting and insulating inclusions.*

We consider the problem of recovering an isotropic conductivity outside some perfectly conducting or insulating inclusions from the interior measurement of the magnitude of one current density field  $|J|$ . We prove that the conductivity outside the inclusions, and the shape and position of the perfectly conducting and insulating inclusions are uniquely determined (except in an exceptional case) by the magnitude of the current generated by imposing a given boundary voltage. We have found an extension of the notion of admissibility to the case of possible presence of perfectly conducting and insulating inclusions. This makes it possible to extend the results on uniqueness of the minimizers of the least gradient problem  $F(u) = \int_{\Omega} a|\nabla u|$  with  $u|_{\partial\Omega} = f$  to cases where  $u$  has flat regions (is constant on open sets). This is a joint work with Adrian Nachman and Alexandru Tamasan. (Received September 21, 2011)