1163-35-54 **Fioralba Cakoni** and **Heejin Lee\*** (`hl707@math.rutgers.edu`). *An Inverse Scattering Obstacle Problem with Partial Thin Coatings.* Preliminary report.

We consider the inverse problem of recovering the shape and boundary coefficients of an obstacle from far-field measurements of the scattered field. More specifically the scatterer is impenetrable with Dirichlet boundary condition on a part of its boundary and anisotropic generalized impedance boundary condition on the complementary boundary. The latter is an approximate model for complicated thin anisotropic, absorbing layer and is given as second-order surface differential operator. A deep analysis of the far-field operator (otherwise known as the relative scattering operator) for this scattering problem leads to unique determination results and reconstruction methods for the shape of the scatterer as well as the boundary coefficients. Our reconstruction method is non-iterative and uses no a priori information on the topology and physics of the unknown object. This inversion approach is mathematically rigorous, it resolves nonlinear information from the range properties of the linear far-field operator, and it is easy to implement. (Received August 02, 2020)