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Isaac Harris* (iharris1107@gmail.com), 150 N. University Street, office: MATH 612, W Lafayette, IN 47906. *Regularization of the Factorization Method with Applications.*

In this talk, we discuss a new regularized version of the Factorization Method. The Factorization Method uses Picard's Criteria to define an indicator function to image an unknown region. In most applications, the data operator is compact which gives that the singular values can tend to zero rapidly which can cause numerical instabilities. The regularization of the Factorization Method presented here seeks to avoid the numerical instabilities in applying Picard's Criteria. This method allows one to image the interior structure of an object with little a priori information in a computationally simple and analytically rigorous way. Here we will focus on an application of this method to diffuse optical tomography where we will prove that this method can be used to recover an unknown subregion from the Dirichlet-to-Neumann mapping. (Received August 16, 2021)