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Kamran Sadiq*, Altenbergerstrasse 69, 4040 Linz, Austria. *A Fourier approach to the inverse source problem in an absorbing and scattering medium with applications to Optical Molecular Imaging.*

We revisit the inverse source problem in a two dimensional absorbing and scattering medium and present a non-iterative reconstruction method using measurements of the radiating flux at the boundary. The approach is based on the Cauchy problem for a Beltrami-like equation for the sequence valued maps, and extends the original ideas of A. Bukhgeim from the non-scattering to the scattering media. Of novelty here, the medium has an anisotropic scattering property that is neither negligible nor large enough for the diffusion approximation to hold. The numerical realization of the proposed reconstruction method is also presented, which is amenable for such scattering media. The feasibility of the proposed algorithm is demonstrated in several numerical experiments, including simulated scenarios for parameters meaningful in Optical Molecular Imaging. This is joint work with Alexandru Tamasan and Hiroshi Fujiwara. (Received September 11, 2019)