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Hongkai Zhao* (zhao@math.uci.edu), Irvine, CA 92617. *Quantitative photoacoustic imaging.*

I will present two recent works for quantitative photoacoustic imaging. Photoacoustic is a hybrid imaging modality that can achieve ultrasound resolution for optical contrast. Quantitative photoacoustic imaging includes two key steps. In the first step, one has to solve an inverse source problem for the acoustic wave to reconstruct initial acoustic source distribution from boundary measurements. We present a Neuman series based iterative algorithm that can recover the initial wave field efficiently and accurately. The second step is to reconstruct optical properties of the medium using internal measurements, namely, using the reconstructed initial acoustic source distribution from the first step. We propose a hybrid reconstruction procedure that uses both interior measurement and boundary current data, which is usually available in diffuse optical tomography. (Received September 24, 2012)