

# Bayesian approach to photoacoustic tomography

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Photoacoustic tomography is a coupled physics imaging modality that combines unique optical contrast with high spatial resolution of ultrasound. In the inverse problem of photoacoustic tomography, the initial pressure distribution generated by an externally introduced light pulse is estimated from time-varying ultrasound measurements made on the boundary of the target. In this work, we approach the inverse problem of photoacoustic tomography in the framework of Bayesian inverse problems. Posterior distribution and point are examined also in situations in which the forward model contains uncertainties. Modelling of errors and its impact on the posterior distribution are investigated.