

Model reduction and modelling of uncertainties in quantitative photoacoustic tomography

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Abstract: In quantitative photoacoustic tomography, the aim is to estimate concentrations of light absorbing molecules from photoacoustic measurements. Numerical solution of this inverse problem requires modelling of light transport. In this work, we investigate utilising the diffusion approximation as a forward model in quantitative photoacoustic tomography, when the accurate model is the radiative transfer equation. Furthermore, modelling of uncertainties using Bayesian approximation error modelling is studied.