

## Photoacoustic tomography in attenuating media with partial data

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**Abstract:** Photoacoustic Tomography (PAT) is a hybrid medical imaging modality that generates high-resolution and high-contrast images by exploiting the coupling of electromagnetic pulses (in the visible region) and ultrasound waves via the photoacoustic effect. The mathematical problem splits into two steps, one involving the inversion of boundary acoustic data to determine the initial source of waves; and the second step uses this internal information to retrieve optical properties of the medium, and it is commonly known as Quantitative PAT.

It's been observed experimentally that acoustic attenuation plays a fundamental role in the performance of this imaging technique, thus, it becomes relevant to include the effect of the acoustic attenuation in the modeling. Focusing only on the step related to the propagation of ultrasound, I will discuss recent results on the mathematical analysis of the inverse problem of PAT for a setting consisting of local acoustic damping, absorbing boundaries, and partial measurements. If the time allows it, I will comment on ongoing work and open questions.