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Research Article

Experimental Study on Bioluminescence Tomography with Multimodality Fusion

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Abstract

To verify the influence of a priori information on the nonuniqueness problem of bioluminescence tomography (BLT), the multimodality imaging fusion based BLT experiment is performed by multiview noncontact detection mode, which incorporates the anatomical information obtained by the microCT scanner and the background optical properties based on diffuse reflectance measurements. In the reconstruction procedure, the utilization of adaptive finite element methods (FEMs) and a priori permissible source region refines the reconstructed results and improves numerical robustness and efficiency. The comparison between the absence and employment of a priori information shows that multimodality imaging fusion is essential to quantitative BLT reconstruction.

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