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## **【953】 Reaction-Diffusion PDE-based framework for tomographic inversions of Tokamak data**

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We consider the challenging problem of sparse-view computerized tomography, in the context of plasma emissivity reconstruction in Tokamak fusion devices. Inversion techniques deal with strong artifacts and often lack robustness. We present a reaction-diffusion PDE-based framework for tomographic inversions. A reaction term ensures data-fidelity, while a diffusion term promotes smoothness achieving regularization. The proposed model represents a robust and mathematically rigorous unification of existing and new regularization strategies. Moreover, the model admits a Bayesian interpretation, opening the way to hyperparameter estimation and uncertainty quantification. Computation employs the open-source Python computational imaging framework Pycsou. We validate the model with Tokamak simulation data in various plasma regimes.

### **Theoretical Work**

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