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Inverse Problems for Time Dependent PDEs

## Parameter Estimation in Distributed Systems: Optimal Design

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**Abstract:** We formulate a very general optimal design problem for the selection of best states to observe, optimal sampling times and locations (i.e., selections of what, when, and where to observe), as well as optimal input perturbations for parameter estimation or inverse problems involving complex nonlinear partial differential systems. A theoretical framework along with an iterative algorithm for implementation of the resulting methodology are given and the algorithms successful use on several examples of wide interest are noted.