Regularization of Dynamic Inverse Problems

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Abstract

We consider new regularization methods for linear inverse problems of dynamic type. Examples of relevant applications are dynamic electric impedance tomography (EIT), x-ray computerized tomography (CT). These methods are based on dynamic programming techniques for linear quadratic optimal control problems. Two different approaches are followed: a continuous and a discrete one. We prove regularization properties and also obtain rates of convergence for the methods derived from both approaches. A numerical example concerning the dynamical EIT problem is used to illustrate the theoretical results.