



Quasi-online parametric identification of moving heating devices in a 2D geometry

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Auteur	Vergnaud, Alban [1], Perez, Laetitia [2], Autrique, Laurent [3]
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Mots-clés	Conjugate gradient method [4], Online parameters estimation [5], Parametric identification [6], partial differential equations [7], Regularization method [8], Sliding time window [9]
Résumé en anglais	<p>This work is devoted to an adaptation of the conjugate gradient method for the identification of heat flux densities provided by two mobile sources on a two-dimensional geometry. This adaptation is based on a sliding-time window in order to achieve quasi-online identification of unknown time-dependent parameters. The proposed method ensures sequential in time iterative regularization in order to deal with the ill-posed nature of inverse heat conduction problem (IHCP). The studied configuration is issued from experimental reflections in order to investigate a practical case. A set of fixed sensors is considered while heating sources trajectories are accurately known. Measurements provided by sensors are disturbed according to a realistic Gaussian noise. Several strategies are detailed in this communication (adaptive integration interval, sliding time window, initialization improvement, choice of the sliding window size). In each situation, the benefit in terms of delay reduction is discussed in regards with the identification accuracy. It is shown that such methodology provides an attractive procedure consistent with adaptive control aims and real time signal processing.</p>
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