Parameter Identification in a Parabolic System Modeling Chemotaxis

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Abstract

Chemotaxis is the process by which cells aggregate under the force of a chemical attractant. The cell and chemoattractant concentrations are governed by a coupled system of parabolic partial differential equations. We establish identifiability of the nonlinear chemotactic parameter. A least-squares approach with Tikhonov regularization is used to find the chemotactic parameter. Numerical results are presented.