Einladung zum Oberseminar Wissenschaftliches Rechnen

Julius-Maximilians-Universität Würzburg
Lehrstuhl für Wissenschaftliches Rechnen IX

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FG Optimierung bei partiellen Differentialgleichungen

Optimal control of patterns in some reaction-diffusion systems

Optimal control problems with respect to a semi-linear parabolic equation which is linearly coupled to finitely many linear parabolic equations are investigated . The system covers well-known models, e.g., the Schlögl equation or the FitzHugh-Nagumo system. A tracking type objective functional including a Tikhonov regularization is employed. In this context, the discussion of distributed control is extended to boundary control and to an additional consideration of some pointwise-state constraints. As a second possibility of localized control strategies, so-called sparse controls, are presented. Here, an additional weighted L^1-norm of the distributed control leads to localized forcing, provided that the associated positive weight is suitably chosen. In the case of sparse controls, second order sufficient optimality conditions are deduced with and without any Tikhonov regularization. Invoking those conditions, the convergence of optimal controls is observed as the Tikhonov regularization tends to zero. Finally, some numerical computations confirm the theoretical results.

Ort: Raum 30.02.003 (2. Stock) (Mathegeb. 30 West)	Zeit: Montag, 25.01.2016, 14.00 Uhr

Zu diesem Vortrag laden wir Sie herzlich ein.

gez. Prof. Dr. Alfio Borzi
gez. Prof. Dr. Roland Griesmaier