数学与系统科学研究院

计算数学所学术报告

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报告题目：

An Approximating Control Design for Optimal Mixing via Fluid Flows

邀请人：　　龚伟 副研究员

报告时间：**2019** 年 **7** 月 **24** 日（周三）

下午 **15:30~16:30**

报告地点：　科技综合楼三层

311 报告厅

Abstract:

We consider an approximating control design for optimal mixing of a non-dissipative scalar field in fluid flows. The objective is to achieve optimal mixing at a given final time, via the active control of the flow velocity through boundary inputs. Due to zero diffusivity of the scalar field, establishing the well-posedness of its G\^{a}teaux derivative requires penalizing the time derivative of the boundary inputs in the cost functional. As a result, the optimality system becomes difficult to solve. Our current approximating approach provides a more transparent optimality system, with the set of admissible controls square integrable in space-time. This is achieved by first introducing a small diffusivity to the scalar equation and then establishing a rigorous analysis of convergence of the approximating control problem to the original one as the diffusivity approaches to zero. Uniqueness of the optimal solution is obtained for the two dimensional case.

欢迎大家参加！