UNIVERSITÄT SALZBURG

SALZBURG MATHEMATICS COLLOQUIUM
Summer 2016

Michael Hintermüller (Berlin)

„Optimal control of multiphase fluids and droplets“

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Abstract:
Motivated by applications in high concentrating photovoltaic (HPV) cells, this talk considers two different regimes of multiphase fluid flows. The first regime leads to a coupled non-smooth Cahn-Hilliard Navier-Stokes systems modeling the dynamics of several fluids with different fluid densities, and the second one, motivated by geometric considerations of the HPV-cell or pressure driven flow, is given by a Hele-Shaw type model with a geometric interface conditions between the fluid phases and pertinent contact line pinning. For both situations, optimal control problems are considered in order to optimally steer the underlying physical device. Due to the non-smoothness in the first case, or the pinning in the second regime, it turns out that the associated optimization problem suffers from inherent lack of constraint qualification which challenges not only theoretical aspects, but also the design of solution algorithms. The talk highlights the focus application, the aforementioned mathematical difficulties, and it provides solutions to the associated problems.

Thursday, **15:00-15:45**
Hörsaal 414, 1. Stock

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