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Oberseminar im Institut für Angewandte Analysis

Sommersemester 2025

Im Rahmen des Oberseminars spricht am Montag, den **23. Juni 2025**:

Juliane Krautz

Universität Augsburg

Dynamic Optimal Transport with Optimal Preferential Paths

We study a dynamic optimal transport type problem on a domain that consists of two parts: a compact set $\Omega \subset \mathbb{R}^d$ (bulk) and a non-intersecting and sufficiently regular curve $\Gamma \subset \Omega$. On each of them, a Benamou-Brenier type dynamic optimal transport problem is considered, yet with an additional mechanism that allows the exchange (at a cost) of mass between bulk and curve. In the respective actions, we also allow for non-linear mobilities. Our first result is a proof of existence of minimizers based on the direct method of calculus of variations. Additionally, we study the case where the curve Γ is allowed to change, being the main interest of our work. To this end, the Tangent-Point energy is added to the action functional in order to preserve the regularity properties of the curve and prevent self-intersections. By relying on suitable compactness estimates both for the time-dependent measures and the curve Γ, the existence of optimizers is shown. We extend these analytical findings by numerical simulations based on a primal-dual approach that illustrate the behaviour of geodesics for fixed and varying curves.

The talk is based on joint work with Marcello Carioni (UT Twente) and Jan-F. Pietschmann (Augsburg).

Der Vortrag findet in **Raum E.60, Helmholtzstr. 18** statt.
Beginn: 16 Uhr (c.t.). Alle Interessierten sind herzlich eingeladen.

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