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DK Seminar

June 15, 2016, 14:15 - 15:45

University of Vienna,

Oskar-Morgenstern-Platz 1, WPI seminar room, 8th floor

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Convergence of gradient flow structures for the discrete porous medium equation

In the seminal paper [1] Otto showed that the porous medium equation may be identified as gradient flow of the Rnyi entropy in the 2-Wasserstein space. Inspired by this result, Erbar and Maas proposed a gradient flow structure for discrete porous medium equations in [2].

We show that it is possible to recover Wasserstein gradient flow structures of the porous medium equation in one dimension by convergence of their discrete counterparts induced by a spatial finite-volume scheme. Crucial ingredients are Γ -convergence of the discrete entropy functionals and convergence of the involved discrete transportation metrics to the 2-Wasserstein distance in the sense of Gromov-Hausdorff.

REFERENCES

- [1] Otto, Felix. "The geometry of dissipative evolution equations: the porous medium equation." *Comm. Partial Differential Equations* 26 (2001), no. 1-2, 101174.
- [2] Erbar, Matthias, and Jan Maas. "Gradient flow structures for discrete porous medium equations." *Discrete Contin. Dyn. Syst.* 34 (2014), no. 4, 13551374.