Cleveland State University

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COLLOQUIUM

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A Wasserstein Norm for Signed Measures

Friday October 23rd at 3pm on Zoom

https://csuohio.zoom.us/j/91945126460

Bio: Magali Tournus is a French mathematician, Lecturer (equivalent of Associate Professor), who graduated from Paris Sorbonne University. Her Ph.D. thesis was an interdisciplinary project on kidney modelling and transport equations, mentored by three advisors: Benoit Perthame (Paris Sorbonne), Aurélie Edwards (Boston University) and Nicolas Seguin (Rennes University). From 2013 to 2015, she came to the USA as a postdoctoral researcher at Penn State University under the direction of Prof. Leonid Berlyand. After 2015, she spent a few months in Bilbao, Spain, where she started to study fragmentation equations, and got a position in Marseille, a big city in Provence (south of France) the same year. Since then, Magali Tournus continues her work on mathematical biology, and she became a specialist of growth-fragmentation equations, from the most theoretical aspects to real life applications through her collaborations with biologists. In parallel, she started a collaboration with Benedetto Piccoli (Rutgers University) on theoretical aspects of transport equations, and on the use of Wasserstein spaces in partial differential equations.

Abstract: We introduce the optimal transportation interpretation of the Kantorovich norm on the space of signed Radon measures with finite mass, based on a generalized Wasserstein distance for measures with different masses. With the formulation and the new topological properties, we obtain for this norm, we prove existence and uniqueness for solutions to non-local and non-linear transport equations with source terms, when the initial condition is a signed measure. I will make this talk pedagogical, explain using examples what is the Wasserstein distance, and explain why it is a big challenge to study partial differential equations in Wasserstein spaces.