Department of Mathematics

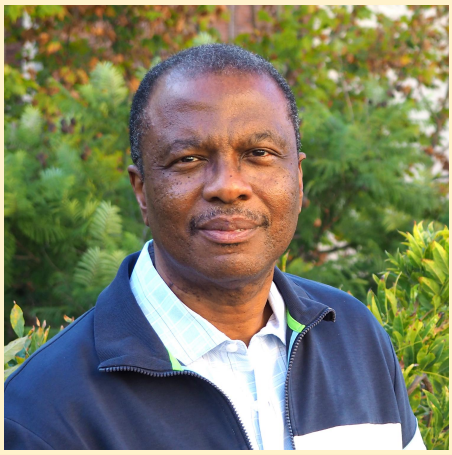
Alexander Ziwet Lectures

February 19-21, 2024

Wilfrid Gangbo

Professor of Mathematics
University of California, Los Angeles

A reception for Professor Gangbo will be held on Tuesday, February 20, at 5:00 p.m. in the Mathematics Upper Atrium, East Hall



Morrey's Theory and Direct Methods of the Calculus of Variations

Monday, February 19 - 4:00 p.m. - 1360 East Hall

In the middle of the last century, Charles Morrey introduced the notions of poly-convexity, rank-one-convexity and quasi-convexity functions, to study variational problems. While the first two notions are local conditions, the third one which turned out to be the most important one, is a non local and poorly understood notion. In this talk we comment on Morrey's conjecture and Iwaniec's conjecture on the Beurling-Ahlfors Transform.

On Differentiability in the Wasserstein Space

Tuesday, February 20 - 4:00 p.m. - 1360 East Hall - Reception to Follow

We consider $P_2(R^d)$, the set of Borel probability measures of finite second moments on R^d, which we endow with the Wasserstein metric W_2. It is well–known that $P_2(R^d)$, W_2), is isometric to a quotient space of the Hilbert space H of square-integrable random variables on $(0, 1)^d$. We elucidate the connection between various notions of differentiability in the Wasserstein space: some have been introduced intrinsically (in the Wasserstein space, by using typical objects from the theory of Optimal Transport). Another notion is extrinsic and arises from the identification of the Wasserstein space with the Hilbert space of square-integrable random variables on a non-atomic probability space.

Hamilton-Jacobi Equations in the Wasserstein Space

Wednesday, February 21 - 4:00 p.m. - 1360 East Hall

We show that the classical theory of well-posedness for viscosity solutions for Hamilton-Jacobi equations in infinite-dimensional Hilbert spaces is brought to bear on well-posedness for Hamilton-Jacobi equations in the Wasserstein space.

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