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Wilfrid Gangbo and **Adrian Tudorascu***, West Virginia University, Department of Mathematics, 320 Armstrong Hall, Morgantown, WV 26506. *Well-posedness for Hamilton-Jacobi equations in spaces of probability measures.*

In recent collaborative work with W. Gangbo we completely elucidated the connections between the various notions of differentiability in the Wasserstein space used so far in the literature. The most delicate part was to characterize the concepts of sub and super gradients of a functional in the Wasserstein space in terms of its lift onto the space of square-integrable random variables on a non-atomic probability space. As a consequence, 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. (Received January 20, 2019)