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Piotr Gwiazda* (pgwiazda@mimuw.edu.pl), University of Warsaw, Institute of Applied Mathematics and Mechanic, Krakowskie Przedmiescie 26/28, 00-927 Warszawa, Poland. *On measure-valued solutions to compressible Euler and similar systems.*

The theory for gravity driven avalanche flows is qualitatively similar to that of compressible fluid dynamics. I will present one of the models describing flow of granular avalanches - the Savage-Hutter model. Originally the model was derived in one-dimensional setting. Our interest is mostly directed to two-dimensional extension. Solutions of the Savage-Hutter system develop shock waves and other singularities characteristic for hyperbolic system of conservation laws. Accordingly, any mathematical theory based on the classical concept of smooth solutions fails as soon as we are interested in global-in-time solutions to the system. I will present the concept of measure-valued solutions (generalization by DiPerna and Majda). Then, I will discuss the issue of weak-strong uniqueness. The talk is based on the following results:

[1] P. Gwiazda On measure-valued solutions to a two-dimensional gravity-driven avalanche flow model. *Math. Methods Appl. Sci.* 28 (2005), no. 18, 2201-2223.

[2] P. Gwiazda, A. Swierczewska-Gwiazda, and E. Wiedemann. Weak-strong uniqueness for measure-valued solutions of the Savage-Hutter equations, to appear in *Nonlinearity*, arXiv:1503.05246 (Received September 20, 2015)