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Global regularity criteria for 2D micropolar equations with partial dissipation. Preliminary report.

In this presentation, we discuss the global regularity (in time) issue of two dimensional incompressible micropolar equations with various partial dissipation. Micropolar fluids represent a class of fluids with non-symmetric stress tensor (called polar fluids) such as fluids consisting of suspending particles, dumbbell molecules, etc. Whether or not its classical solutions of 2D micropolar equations without velocity dissipation and micro-rotational viscosity develop finite time singularities is a difficult problem, and remains open. We mainly focus on two types of partial dissipation cases, and we present the global regularity condition. (Received September 13, 2017)