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**Dmitry Zenkov\*** (dvzenkov@ncsu.edu). *Moving Frames in Mechanics*.

The use of moving frames and nonmaterial velocity in mechanics has a two and a half century long history. The key steps of this development were carried out by Euler, Poincaré, Hamel, and recently Marsden in relation to the dynamics and stability of rigid body, fluid, and interconnected mechanical systems. The talk will review some of these ideas and discuss recent development of this formalism for infinite-dimensional mechanical systems. (Received July 18, 2017)