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Lagrangian evolution of velocity increments and development of non-Gaussian statistics in rotating turbulence[1] YI LI, CHARLES MENEVEAU, Department of Mechanical Engineering, The Johns Hopkins University, Baltimore, MD, 21218 — Recently, a system describing the Lagrangian evolution of velocity and passive scalar increments has been shown to reproduce many well-known intermittency trends in incompressible turbulence (Li and Meneveau, JFM vol 558, p. 133, 2006). Here we generalize the system to consider rotating turbulence. To take into account the effects of the Coriolis force, a system describing the Lagrangian evolution of three components of the velocity increment aligned with an advected material line turns out to be most convenient. After reviewing previous results, the derivation of the system is presented. Numerical time-integration of the system starting from Gaussian initial distributions is conducted. The effects of rotation on the development of non-Gaussain tails in the distributions are examined and comparison with non-rotating cases is made.

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