Abstract Submitted
for the DFD20 Meeting of
The American Physical Society

Investigation of finite-time singularity models of the Navier-Stokes equations[1] PHILIP J. MORRISON, University of Texas at Austin, YOSHIFUMI KIMURA, Nagoya University — Recently proposed low degree-of-freedom models [1] for describing the approach to finite-time singularity of the incompressible Navier-Stokes equations are investigated. These models assume an initial finite-energy configuration of two vortex rings placed symmetrically on two tilted planes. The noncanonical Hamiltonian structure [2] of the inviscid limit of the models will be presented and shown to elucidate the nature of the possible finite-time singularities in the model.

[1] H. K. Moffatt and Y. Kimura, J. Fluid Mech. **861**, 930 (2019); **870 R1**, (2019).
[2] P. J. Morrison, Rev. Mod. Phys. **70**, 467 (1998).

[1]PJM was supported by U.S. Dept. of Energy Contract # DE-FG05-80ET-53088 and YK by JSPS KAKENHI #s JP18H04443, JP24247014 and JP16H01175.

Philip Morrison
University of Texas at Austin

Date submitted: 10 Aug 2020 Electronic form version 1.4