Depletion of nonlinearity in two-dimensional turbulence ANDREY
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ROBERT RUBINSTEIN, Newport News, VA, USA — The strength of the nonlin-
earity is measured in decaying two-dimensional turbulence, by comparing its value
to that found in a Gaussian field. It is shown how the nonlinearity drops following
a two-step process. First a fast relaxation is observed on a timescale comparable
to the time of formation of vortical structures, as also observed in 3 dimensions
[1], then at long times the nonlinearity relaxes further during the phase when the
eddies merge to form the final dynamic state of decay. Both processes seem roughly
independent of the value of the Reynolds number.

[1] Bos, W. J. T., & Rubinstein, R. (2013). On the strength of the nonlinearity in
isotropic turbulence. Journal of Fluid Mechanics, 733, 158-170.

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