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- Comment on "Superfluid Turbulence from Quantum Kelvin Wave to Classical Kolmogorov Cascades" by Yepez et al.

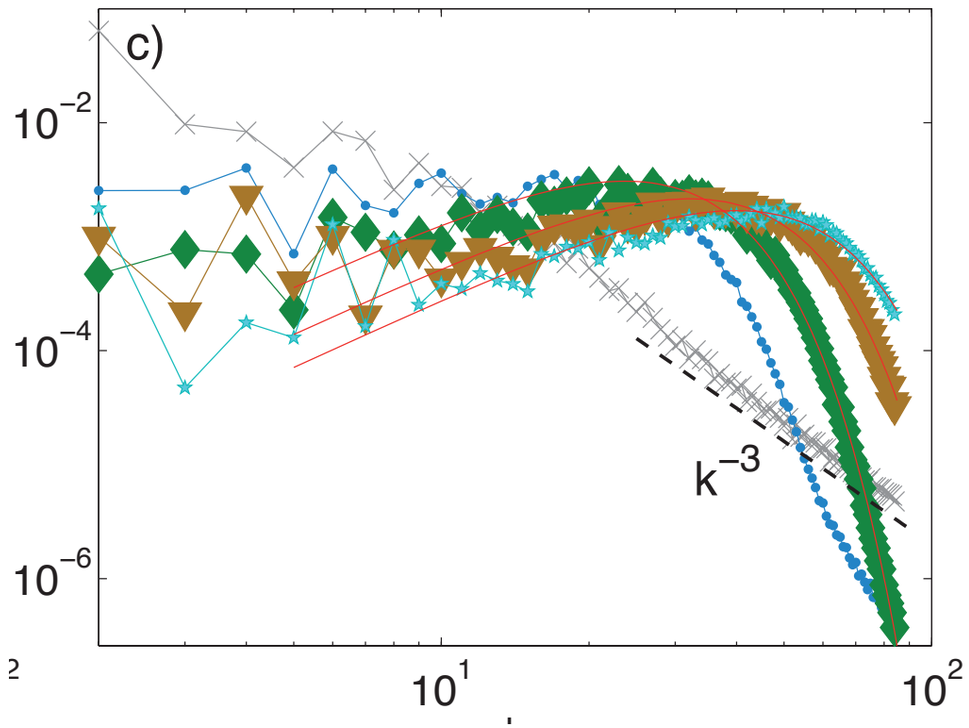
- They «observed» high-k «Kelvin wave» spectrum of k^3
- Power law is an artifact stemming from the definition of the kinetic energy spectra and is not directly related to a Kelvin wave cascade

$$\partial_t \psi = ic/(\sqrt{2}\xi)(\psi - |\psi|^2\psi + \xi^2\nabla^2\psi),$$

$$\psi = \sqrt{\rho}\exp(i\tfrac{\phi}{\sqrt{2}c\xi}) \qquad \mathcal{E}_{\rm kin} = 1/2(\sqrt{\rho}v_j)^2,$$

ξ, verifies $\sqrt{\rho(r)} \sim r$ as $r \to 0$ and $\sqrt{\rho(r)} = 1 + O(r^{-2})$ for $r \to \infty$. Thus $\sqrt{\rho}v_j$ has a small r singular behavior of the type r^0 and behaves as r^{-1} at large r. In general, for a function scaling as $g(r) \sim r^s$ the (2D) Fourier transform is $\hat{g}(k) \sim k^{-s-2}$ and the associated spectrum scales as k^{-2s-3}. Thus $E_{\rm kin}(k)$ scales as k^{-3} for $k \gg k_\xi \sim \xi^{-1}$ and as k^{-1} for $k \ll k_\xi$ [3].

poral evolution of kinetic energy spectrum; the solid red lines correspond to fits using Eq.(62) and the dashes black line indicate k^{-3} power-law scaling. d) Temporal evolution of ef-



Artifact in TYG initial data in: arXiv:1010.0116v2.