Review of: "Quantum-Inspired Stochastic Modeling and Regularity in Turbulent Fluid Dynamics"

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This is a review of the paper 'Quantum-Inspired Stochastic Modeling and Regularity in Turbulent Fluid Dynamics'. It works on the quantum scale analysis of turbulent flows. I find the paper interesting and intuitive.

1. In Eq 5, you assume 'u' at all scales. But the right-hand side, the Schrödinger operator, assumes very small scales. So the correction is only for the lower scales?
2. A stochastic field of velocity implies higher velocities, to turn into turbulence. So at lower velocities, does the flow revert back to traditional NS equations?
3. In Eq. 5, the quantum term looks like another diffusion term. How do you say that it looks like a redistribution term?
4. Again, in Eq 9, you are introducing a fractional Laplacian. Is the purpose to make it random/chaotic? Then it is valid for small velocities only.
5. In equation 13, isn't the first term on the RHS inside the integral $\nabla^2 u$ and not ∇u^2 ?
6. In all your calculations, there only seems to be a fluctuating chaotic component. Shouldn't you have a mean term as well? Otherwise, numerical modelling will produce stability problems. That would mean a term like $2+\alpha/2$ instead of $\alpha/2$ for the superscript in Eq 13.
7. In Eq 13, the quantum effects seem to increase dissipation. What is the physical process that explains that?
8. In Eq 15, isn't the stochastic term needed at lower velocities? It is an artificial dissipation term, isn't it?
9. In superfluids, there is no viscous term, only quantum terms and a stochastic term?
10. In Eq 35, why is the Schrödinger term dropped? Won't there be a dissipation due to that as well? Or does the eq. represent only a classical system?
11. Can the stochastic quantum NS equation be solved? If so, what expression would you get for eddy viscosity?

On the whole, it is a novel and interesting paper.