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The Editors,
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Dear Editor,

We are pleased to submit our manuscript entitled **"Inverse energy transfer in three-dimensional quantum vortex flows"** to be considerated for publication in *Physical Review Letters*. Our paper shows numerical evidence of the impact of superfluid vortex motion on the embedding thermal excitations - the so-called normal fluid. Namely, a topological change in the superfluid vortex configuration (a vortex reconnection) triggers a flux of normal fluid energy towards large-scale motions. This is surprising, as in ordinary fluids vortex reconnections generate an energy transfer in the opposite direction of k-space, towards small-scale motions.

We clearly identify the underlying physical mechanism for this inverse energy transfer: the Kelvin waves generated on the superfluid vortices by the reconnection force helically the normal fluid, producing a chiral flow of thermal excitations. This helical imbalance is similar to what happens in ordinary turbulence if it is artificially decimated by the numerics (as demonstrated in Phys. Rev. Lett. **108**, 164202, 2012). The important element to emphasize is that in superfluid helium this imbalance occurs naturally in the physical world.

We believe that our findings will be of interest to readers of *Physical Review Letters*, as they contribute to a deeper understanding of turbulence; they will also stimulate investigations on the role of helicity in quantum turbulence, an aspect until now overlooked in the low-temperature community.

Thank you for considering this manuscript; we look forward to your response.

On behalf of the authors,

Piotr Stasiak