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# Fluids of light in nonlinear crystals

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Quantum fluids of light merge many-body physics and nonlinear optics, revealing quantum hydrodynamic features of light when it propagates in nonlinear media. One of the most outstanding evidence of light behaving as an interacting fluid is its ability to carry itself as a superfluid.
Here, we report a direct experimental detection of the transition to superfluidity in the flow of a fluid of light past an obstacle in a bulk nonlinear crystal. In this cavityless all-optical system, we extract a direct optical analog of the drag force exerted by the fluid of light and measure the associated displacement of the obstacle. Both quantities drop to zero in the superfluid regime characterized by a suppression of long-range radiation from the obstacle.
The experimental capability to shape both the flow and the potential landscape paves the way for simulation of quantum transport in complex systems.

## Choix de session parallèle

2.3 Fluides quantiques et lumière

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**Classification de Session:** Séance Parallèle