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WITHDRAWN (U*) Sonic Event Horizon in a Bose-Einstein Condensate

Wednesday 21 June 2023 14:30 (15 minutes)

We consider a one-dimensional flowing Bose-Einstein condensate (BEC). We numerically model the mean-field wave function of this system, and compare our results to an analytical solution derived using the hydrodynamic approximation. We find that a sonic event horizon forms in the BEC, where in one region the flow of the condensate exceeds the speed of sound in the BEC, while across a boundary the opposite holds. We further introduce wave packets into the BEC to investigate their time evolution.

Keyword-1

Bose-Einstein condensate

Keyword-2

Sonic event horizon

Keyword-3

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