

Abstract Submitted
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Observation of stationary and non-stationary flow past an obstacle in a Bose-Einstein condensate PETER ENGELS, COLLIN ATHERTON, Washington State University, Pullman, WA 99164 — We experimentally study the fluid flow past an obstacle moving through an elongated Bose-Einstein condensate with repulsive interactions. Depending on the speed and strength of the obstacle, both stationary and non-stationary regimes are accessed. At slow speeds as well as at very fast speeds, stationary fluid flow is obtained. However, at intermediate speeds, a non-stationary regime is observed in which the condensate gets filled with a stack of dark solitons. Both attractive and repulsive obstacles are studied, and a significant difference in the critical velocities for nonstationary flow is found for the two cases.

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