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Experimental study of vortex dynamics in a highly oblate fermionic condensate BUMSUK KO, JEE WOO PARK, YONG-IL SHIN, Seoul National University — In a 2D superfluid, quantized vortices are topological point defects whose dynamics reveal the thermodynamic and transport properties of the superfluid. In this presentation, we report on our experimental progress on the study of the vortex dynamics in a fermionic condensate of ^{6}Li atoms with strong interactions. We simultaneously trap ^{23}Na and ^{6}Li atoms in an optically plugged quadrupole trap, and perform forced rf-evaporation of ^{23}Na to sympathetically cool ^{6}Li. A Fermi gas of about 10^6 lithium atoms is prepared in an oblate optical dipole trap (aspect ratio of 1:100) at a temperature of $T/T_F = 0.15$. Strong s-wave interactions are induced in a spin-mixture of the two lowest hyperfine states using a broad Feshbach resonance, and a fermionic condensate is formed by evaporative cooling. Using a moving optical obstacle, we can generate a vortex dipole in the condensate. We will discuss the measurements of the critical velocity for vortex shedding as a function of the interaction strength.

Bumsuk Ko
Seoul Natl Univ

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