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Nambu-Goldstone Mode in a Rotating Dilute Bose-Einstein Condensate TATSUYA NAKAJIMA[1], Department of Physics, Tohoku University, MASAHITO UEDA[2], Department of Physics, Tokyo Institute of Technology —
The Nambu-Goldstone mode associated with vortex nucleation in a harmonically confined, two-dimensional dilute Bose-Einstein condensate is identified to be the lowest-lying envelope of a series of octupole-mode branches that are shifted one by one by an additional quadrupole-mode excitation. As the vortex reaches the center of the condensate and becomes stabilized, the Nambu- Goldstone mode is found to acquire mass due to its coupling to higher rotational bands.

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