

Abstract Submitted
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Experimental determination of fluxoid quantum's contribution to magnetic moment for force metrology JAE-HYUK CHOI, HEONHWA CHOI, YUN WON KIM, MIN-SEOK KIM, Korea Research Institute of Standards and Science, SOON-GUL LEE, Korea University Sejong Campus — Utilizing a cantilever torque-magnetometry equipped with fiber-scanning capability, we have executed precision measurements of the magnetic moment of a micron-sized Nb ring in superconducting state at $T = 4$ K, which is a key element for sub-piconewton force standard previously suggested by some of the authors. The magnetic moments due to diamagnetic response and individual magnetic fluxoid have been independently determined with a resolution of sub-femto-Am². Within the accuracy of the spring constant determined from a thermal noise method, the results are very consistent with the estimation by Brandt and Clems model that considers finite-penetration-depth effect.

Jae-Hyuk Choi
Korea Research Institute of Standards and Science

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