

Abstract Submitted
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Interference of Rotating Atomic Clouds ERICH MUELLER, Cornell,
TIN-LUN HO, The Ohio State University — We study the theory of interference
between spinning clouds of ultracold atoms; quantifying how intermeshed vortices in
two displaced clouds form intricate patterns when the clouds are overlapped. These
patterns, dominated by stripes, can be imaged in circumstances where individual
vortices cannot be resolved. We contrast these structures (which were recently ob-
served at JILA [Schweikhard et al. Phys. Rev. Lett. 93, 210403 (2003)]) with the
ones which will be seen during the interference of two atomic clouds in highly cor-
related quantum Hall states. The striking differences in these interference patterns
allows one to distinguish coherent and correlated states.

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