

Abstract Submitted  
for the DAMOP06 Meeting of  
The American Physical Society

**Spontaneous Symmetry Breaking in a Quenched Ferromagnetic Spinor Condensate** MUKUND VENGALATTORE, LORRAINE SADLER, JAMES HIGBIE, SABRINA LESLIE, DAN STAMPER-KURN, University of California, Berkeley, E1 TEAM — We observe spontaneous symmetry breaking in a  $F=1$   $^{87}\text{Rb}$  spinor condensate after it is quenched past a “polar” to ferromagnetic quantum phase transition. As an initially unmagnetized condensate is brought to low magnetic field, nondestructive phase contrast images reveal the spontaneous formation of ferromagnetic domains with a characteristic length scale of 6 microns, much smaller than the size of the condensate. Concurrent with the formation of these domains, we also observe topological defects which we characterize as singly charged spin vortices. The time scale of the evolution is well described by a dynamical instability resulting from a competition between the quadratic Zeeman energy and the spin dependent interaction energy. Recent progress from this study will be presented.

Mukund Vengalattore  
University of California, Berkeley

Date submitted: 30 Jan 2006

Electronic form version 1.4