Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Controlling Double Vortex States in Low-Dimensional Dipolar Systems SERGEY PROSANDEEV, Research Assistant Professor, LAURENT BELLAICHE, 21-st century Professor in Nanotechnology, PHYSICS DEPARTMENT, UNIVERSITY OF ARKANSAS TEAM — The reversal process of the chirality of each opposite vortex belonging to a double vortex state in ferromagnetic hysterons, via the application of in-plane magnetic fields, is reported [1]. Simulations reveal that such a process involves the formation of four intermediate states, including original ones. Hysteresis loops can occur only in a counterclockwise fashion because of one of these intermediate states. Double vortex states can also be controlled by electric fields in ferroelectric nanostructures of different shapes, but with some key differences with respect to the ferromagnetic case. This work is supported by ONR grants N00014-04-1-0413 and N00014-08-1-0915, DOE grant DE-FG02-05ER46188 and NSF grants DMR-0701558, DMR-0404335 and DMR-0080054 (C-SPIN). Some computations were made possible thanks to the MRI Grants 0421099 and 0722625 from NSF. [1] S. Prosandeev and L. Bellaiche, Physical Review Letters **101**, 097203 (2008).

Sergey Prosandeev
Research Assistant Professor

Date submitted: 19 Nov 2008 Electronic form version 1.4