Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

**Meron and Haldane-Shastry spin chain states in quantum dots**
MILICA MILOVANOVIC, ALEKSANDRA PETKOVIC, Institute of Physics, Belgrade — We study solutions of the Coulomb interaction problem, in the lowest Landau level approximation, of a quantum dot with N = 4 and N = 6 electrons, without Zeeman term, and above the maximum density or filling factor one state. By making maps of spin correlations of the solutions we are able to connect excitations of the dot with states of the (one-dimensional) Haldane-Shastry spin chain. We also argue that the solutions of the problem without Zeeman term can be described as meron quasiparticle excitations analogous to vortex excitations in the completely polarized state. As a result we will describe how these meron excitations and states of the dot can be connected with spinon states of the Haldane-Shastry chain. This connection will enable us to associate orbital spin currents to quantum dot states.

Milica Milovanovic
Institute of Physics, Belgrade

Date submitted: 26 Nov 2005 Electronic form version 1.4