Abstract Submitted
for the DAMOP05 Meeting of
The American Physical Society

Progress Towards Trapped-Ion Quantum Information Processing at McMaster University. BRIAN KING, JASON NGUYEN, JIAJIA ZHOU, LAURA TOPPOZINI, Dept. Physics & Astronomy, McMaster University — We are constructing a trapped-ion quantum information processor to explore quantum computing technology and applications and general quantum state engineering. In particular, we will trap $^{24}Mg^{+}$ and $^{25}Mg^{+}$ ions in a linear RF (Paul) trap geometry. We will use the ground-state hyperfine levels of the $^{25}Mg^{+}$ ions as internal-state qubits and the ions' shared motional degree of freedom as a "quantum data bus." We discuss progress in constructing the apparatus, including an all-solid-state source of 280-nm UV laser light.

Brian King
Dept. Physics & Astronomy, McMaster University

Date submitted: 02 Feb 2005 Electronic form version 1.4