DNP07-2007-000442

Abstract for an Invited Paper for the DNP07 Meeting of the American Physical Society

Scalar and right-handed current searches using trapped atoms DAN MELCONIAN, University of Washington

Neutral atom traps coupled to a radioactive ion beam facility can be used to provide an ideal source of β decaying atoms: the atoms are cold, compact, and the daughter particles escape the source with negligible distortions to their momenta. By measuring the $\beta - \nu$ correlation parameter in the $0^+ \rightarrow 0^+$ decay of ^{38m}K, the TRINAT collaboration has improved the limits on possible scalar currents (Gorelov, *et al.*, Phys. Rev. Letts. **94** (2005) 142501). We have recently demonstrated the ability to highly polarize laser-cooled atoms and to search for right-handed currents by measuring the neutrino asymmetry parameter in the $I^{\pi} = \frac{3}{2}^+$ decay of ³⁷K (Melconian *et al.*, Phys. Lett. B **649** (2007) 370). A summary of these experiments and the planned improvements will be presented.