Abstract Submitted
for the APR09 Meeting of
The American Physical Society

Double beta decay daughter ion detection on an optical fiber for EXO[1] BRIAN MONG, SHON COOK, WILLIAM FAIRBANK, Colorado State University, EXO COLLABORATION — The EXO neutrinoless double beta decay experiment with ^{136}Xe can be background free if the daughter, ^{136}Ba, can be detected with high efficiency. This talk will present progress on a proposed single Ba^+ ion detection technique where the ion is drawn by electric fields and frozen on the tip of a cold optical fiber in the liquid Xenon TPC. The fiber guides excitation laser light towards the detection region and collects fluorescence back up the fiber. Experimental results on detecting small amounts of Rhodamine 6G dye molecules in solution and Ba atoms in solid Xe will be presented, along with preparations for studies of Ba^+ ions deposited with a mass-selected ion beam.

[1]Supported by the National Science Foundation under Grant No. PHY-0652347.

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Date submitted: 13 Jan 2009 Electronic form version 1.4