

Abstract Submitted
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Detection at the single molecule level using an optical fiber¹

THOMAS TOPEL, Northeast Christian Academy and Colorado State University, BRIAN MONG, WEI-TING CHEN, WILLIAM FAIRBANK, Colorado State University — We are developing a method for detecting single Ba⁺ ions in solid xenon on a fiber probe for the EXO double beta decay experiment. As a demonstration of potential capability, we have explored detection of Rhodamine 6G molecules and quantum dots in solution using the same optical setup. We report results on detection of ~ 1 dye molecule on the average in the probe volume and attempts to do the same with quantum dots. Steps to fix single dye molecules or quantum dots in position and observe blinking from single molecules or dots will follow.

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