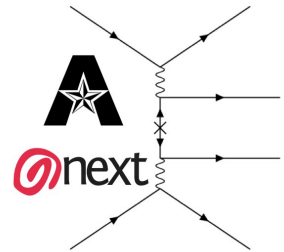


Single Molecule Fluorescent Imaging & Neutrinoless Double Beta Decay

Austin D McDonald, Dr. Fernanda Psihas
Dr. Ben J.P. Jones, Dr. David R Nygren
Department of Physics



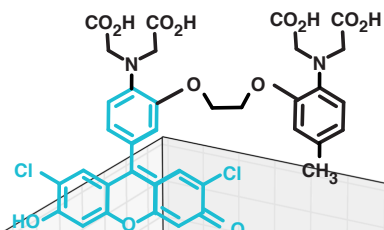
Single Molecule Imaging in Xenon Gas

Molecules become fluorescent after capturing Ba^{++}

Non-fluorescent

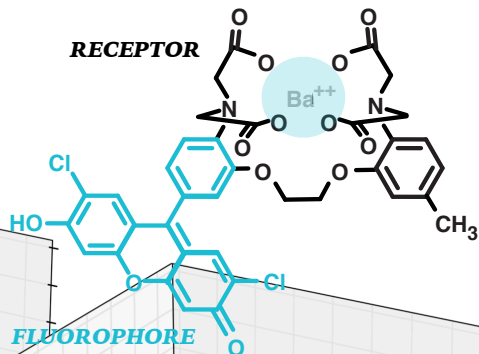
Fluorescent

RECEPTOR

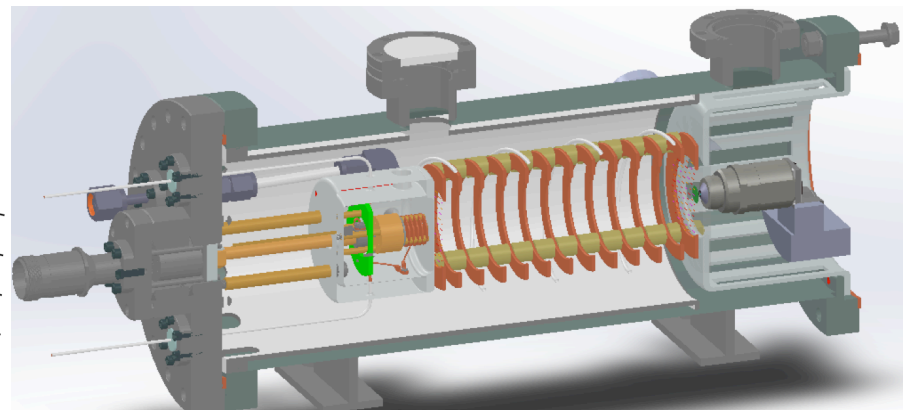
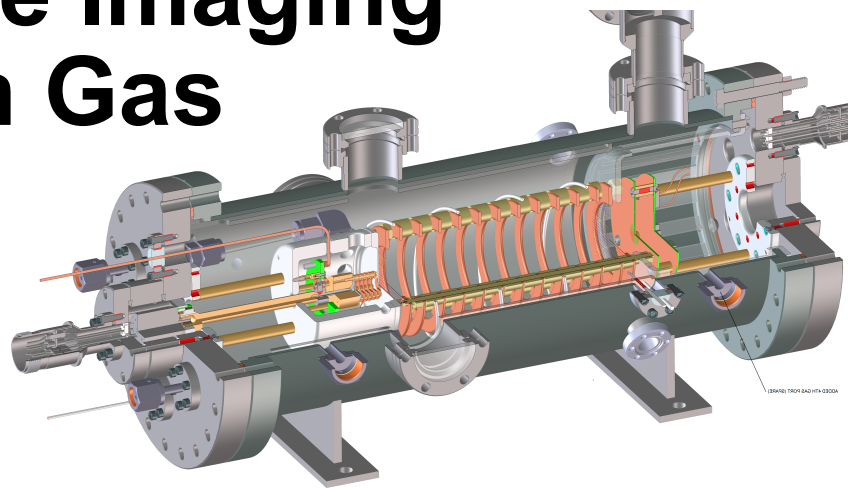
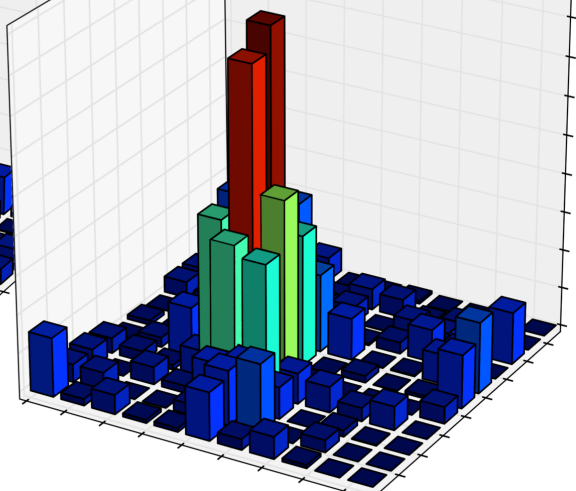
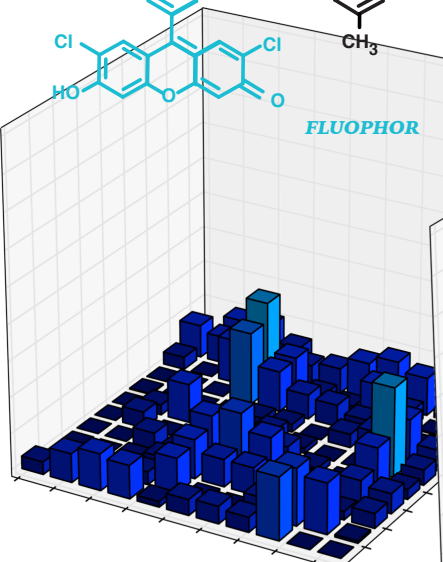


FLUOPHOR

RECEPTOR



FLUOROPHORE



Optical sensor currently under development

Summary

- We have demonstrated for the first time **single barium** ion identification with SMFI
- HPGXe TPC with **internal real-time fluorescent tagging of barium daughter** at room temperature may offer a new way to eliminate gamma ray backgrounds in NLDBD search