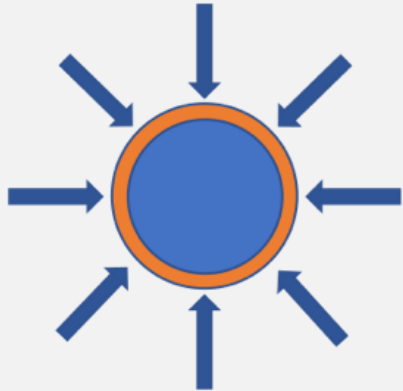


# Measuring Low Energy Nuclear Cross Sections using Inertial Confinement Fusion

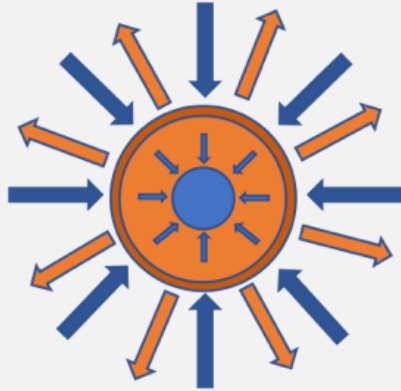
Katelyn Cook, Mark Yuly  
Houghton College Department of Physics  
Rochester Symposium of Physics Students  
March 30, 2019

# MEASURING LOW ENERGY NUCLEAR CROSS SECTIONS USING ICF

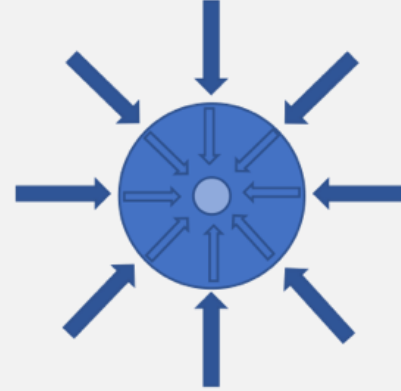
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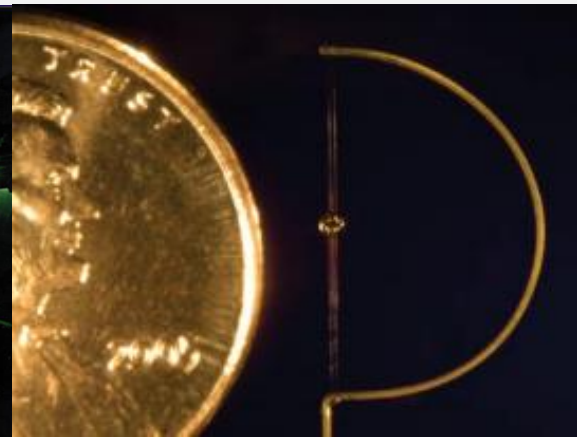
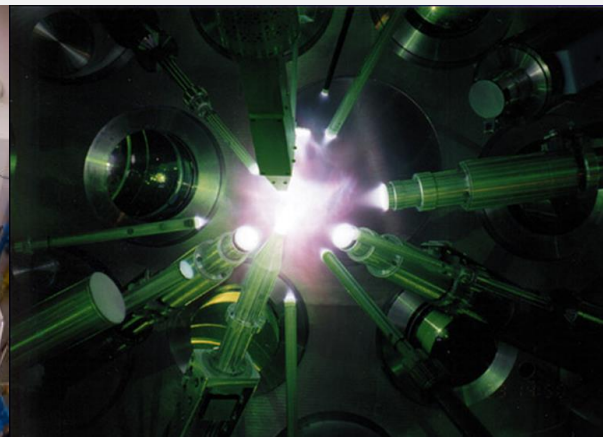
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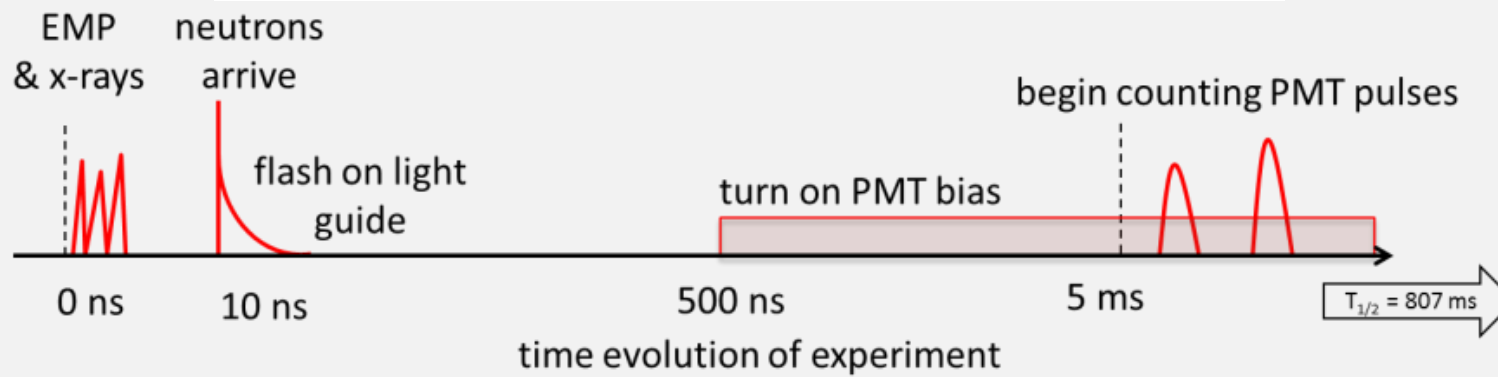
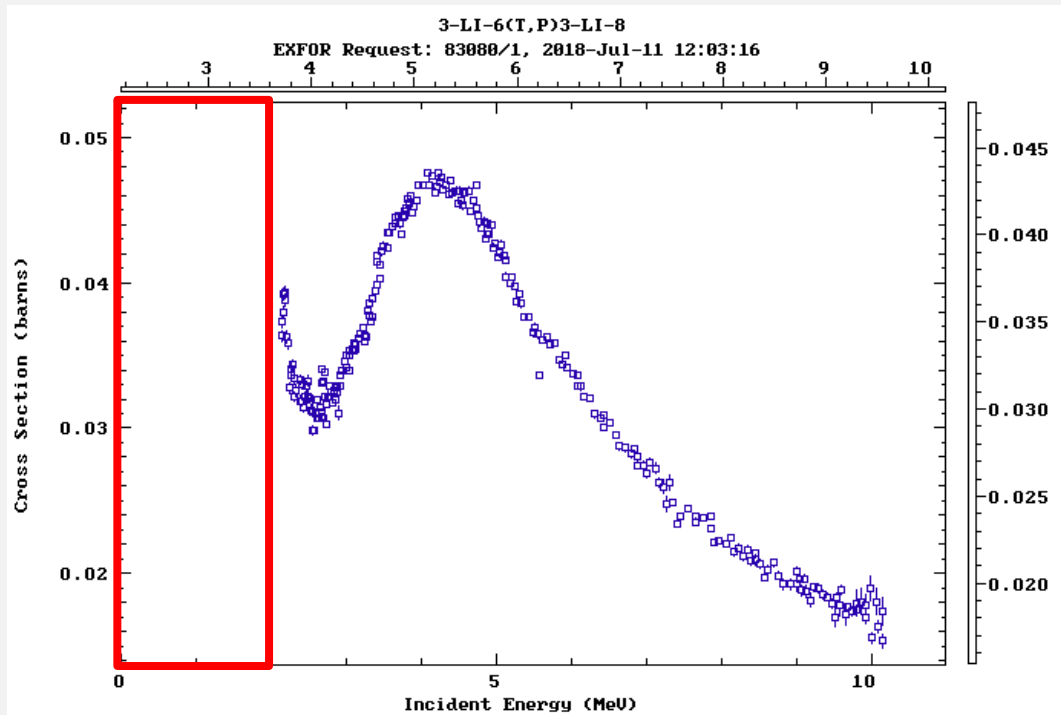
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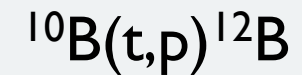
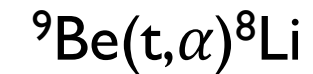
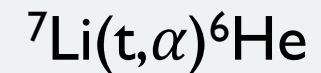
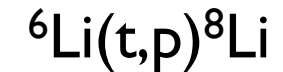
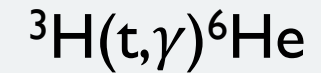
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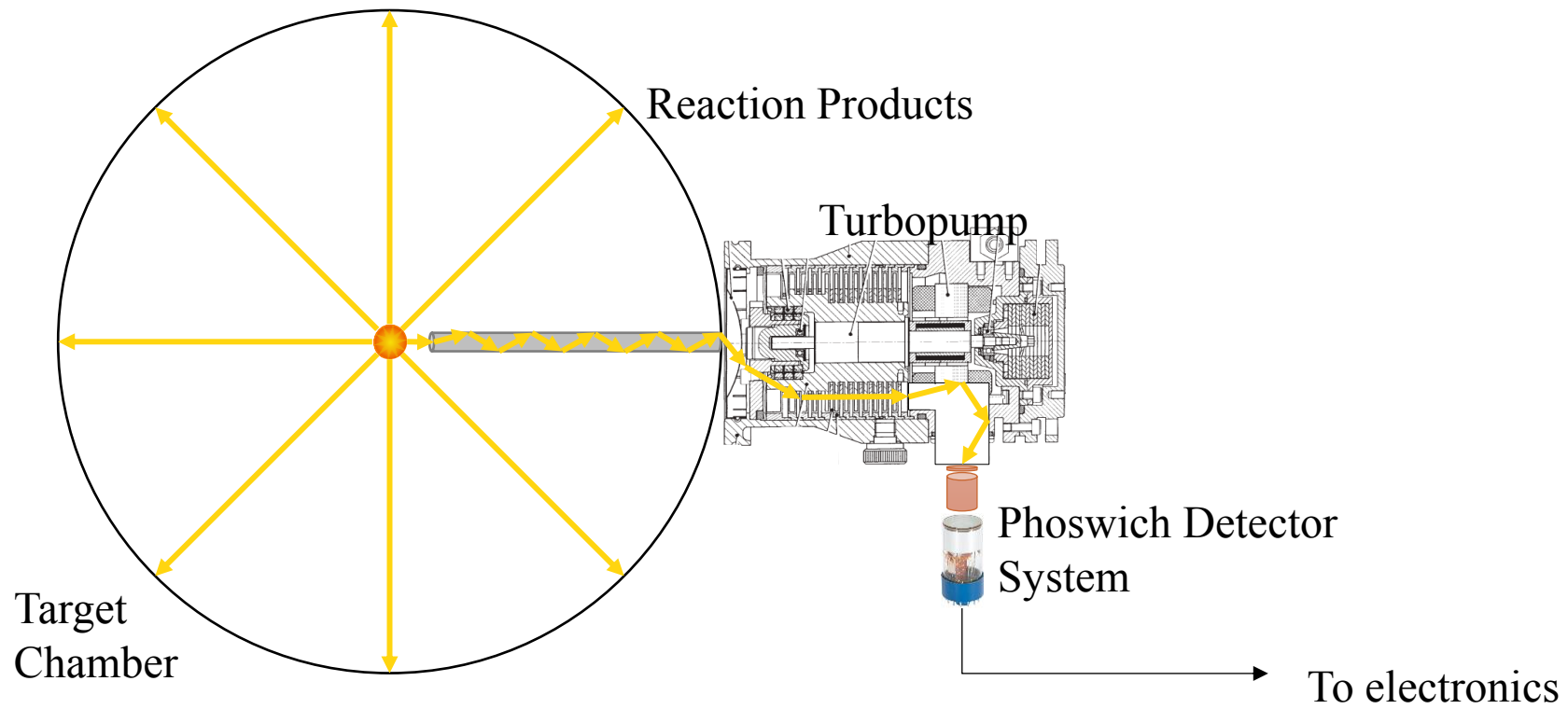
# MEASURING LOW ENERGY NUCLEAR CROSS SECTIONS USING ICF



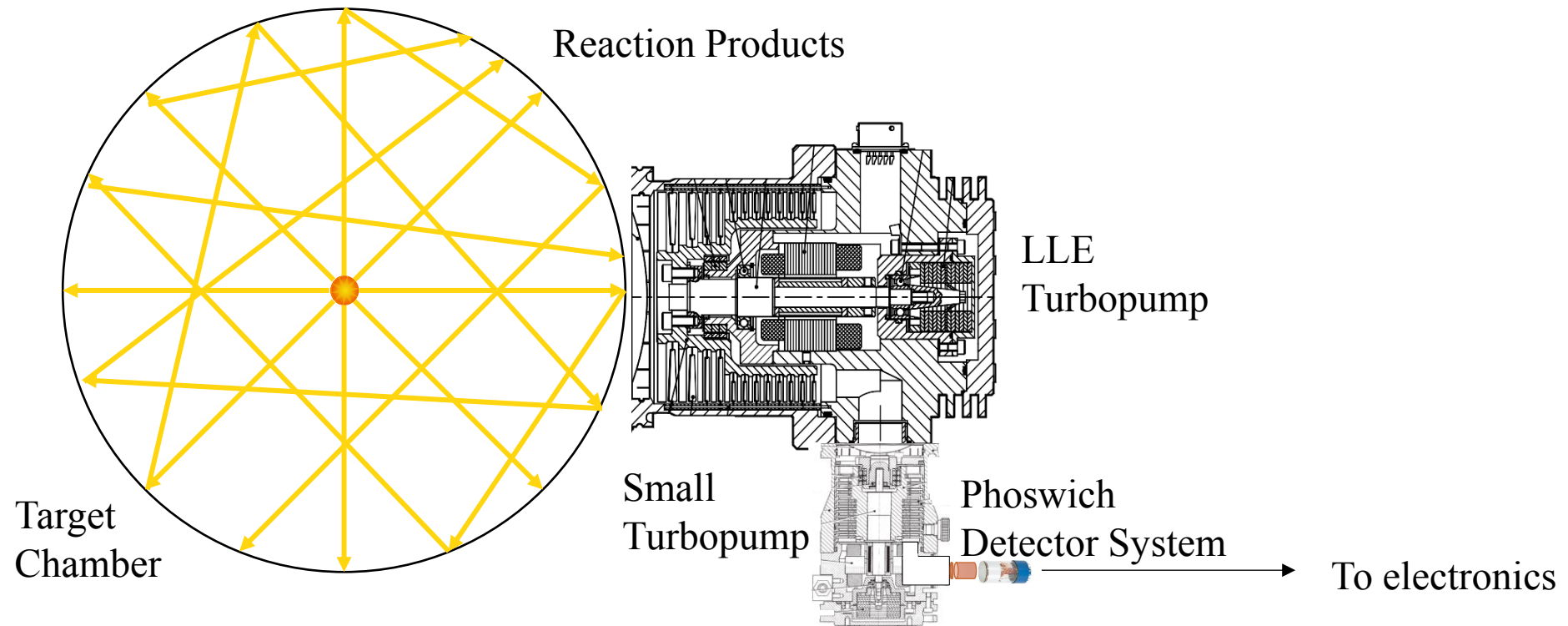
## Selected Reactions



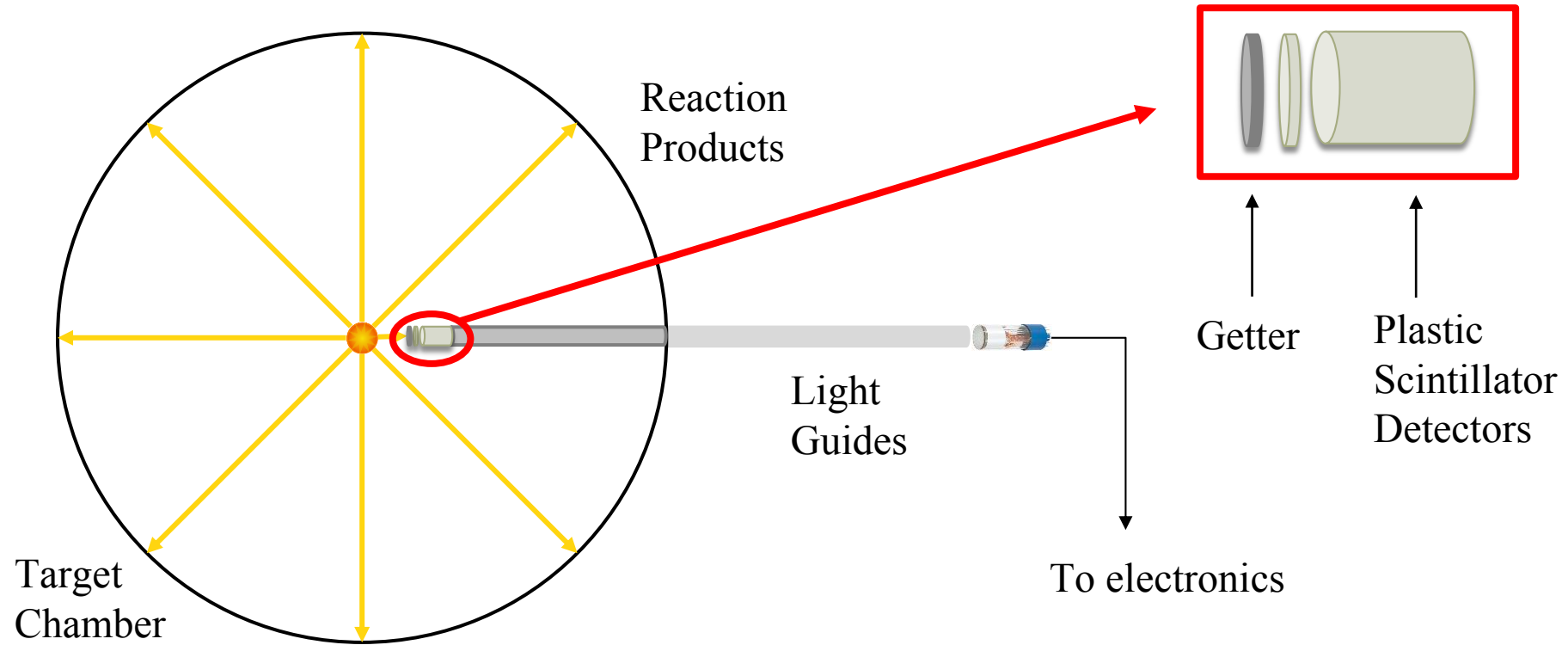
# EXPERIMENTAL DESIGN FOR ICF: COLLECTION TUBE



# EXPERIMENTAL DESIGN FOR ICF: GRAB EVERYTHING!

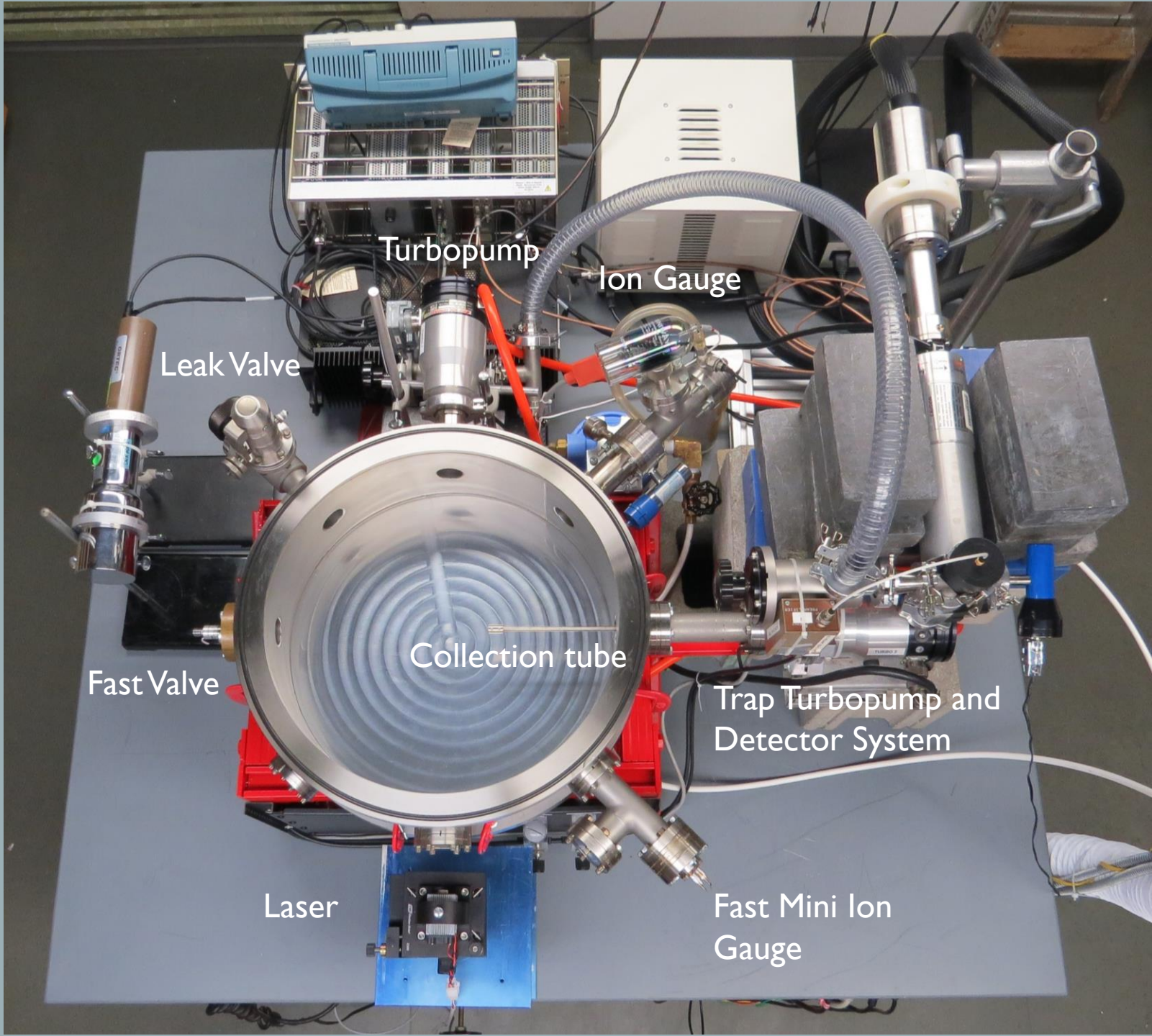
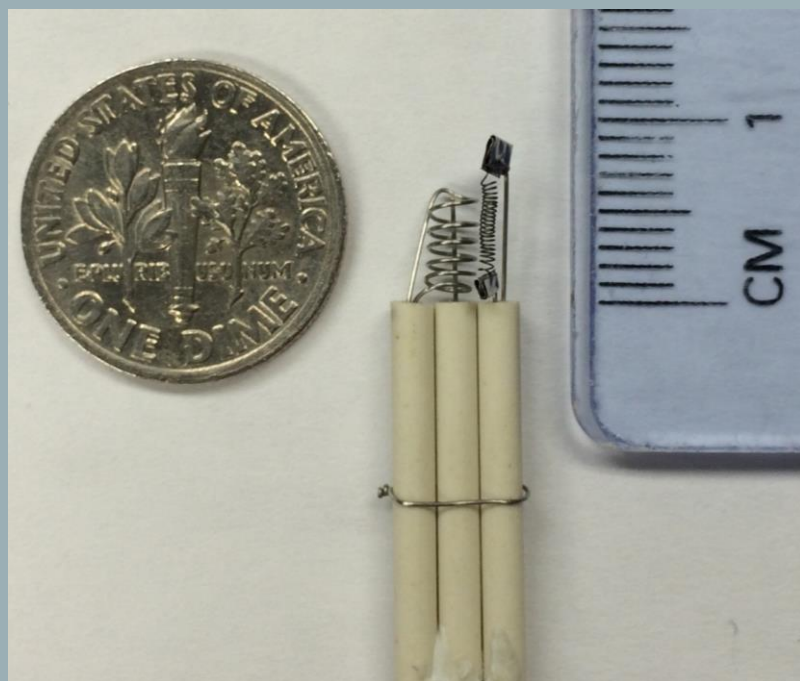


# EXPERIMENTAL DESIGN FOR ICF: GETTER

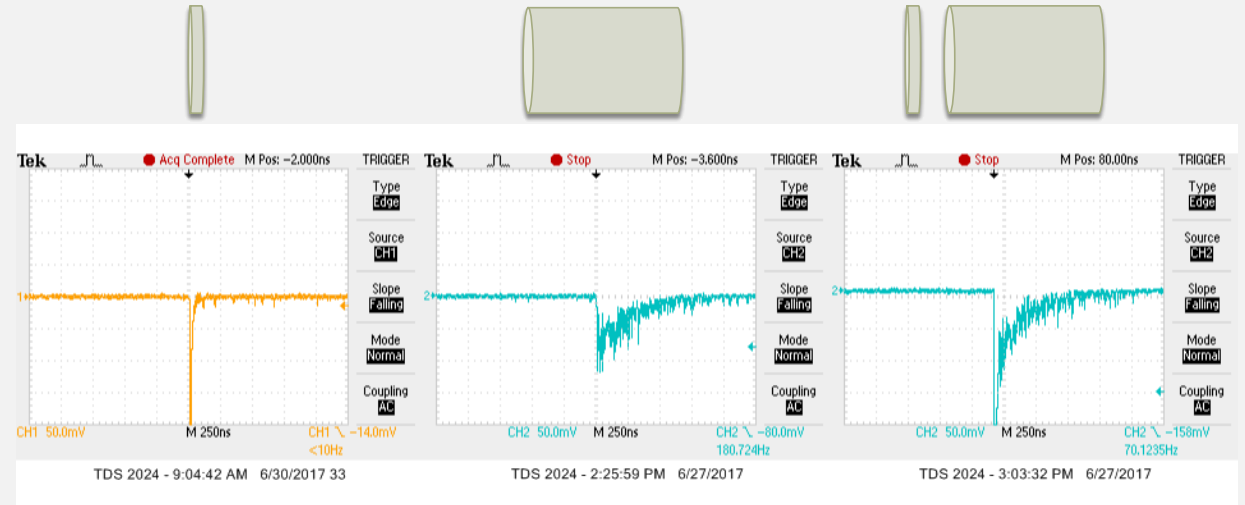
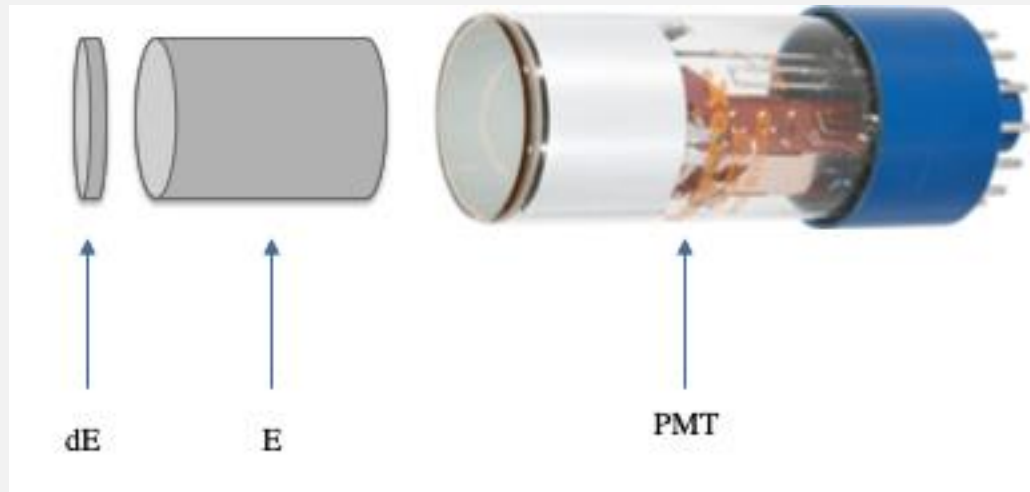




# SMALL SCALE FEASIBILITY STUDY



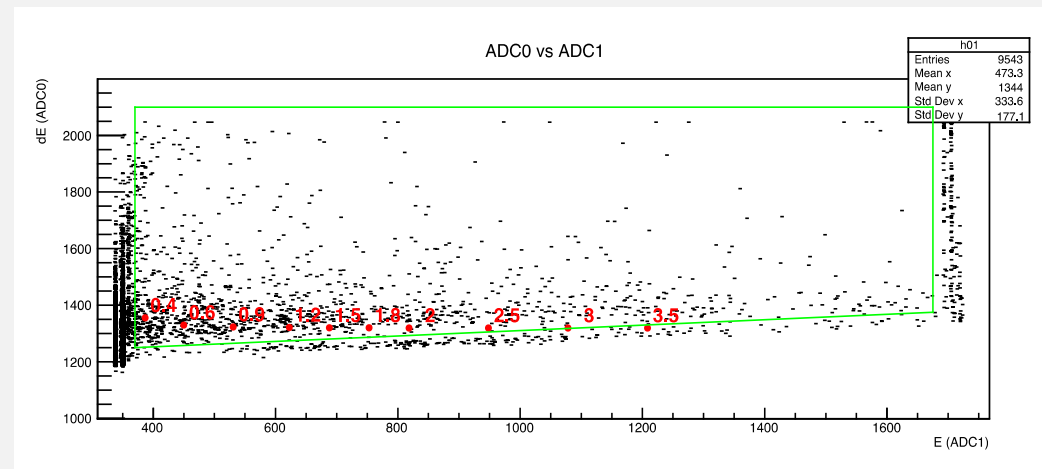
# CAN WE DEVELOP A DETECTOR SYSTEM TO MEASURE THE BETA DECAY?



Thin, fast scintillator  
ONLY

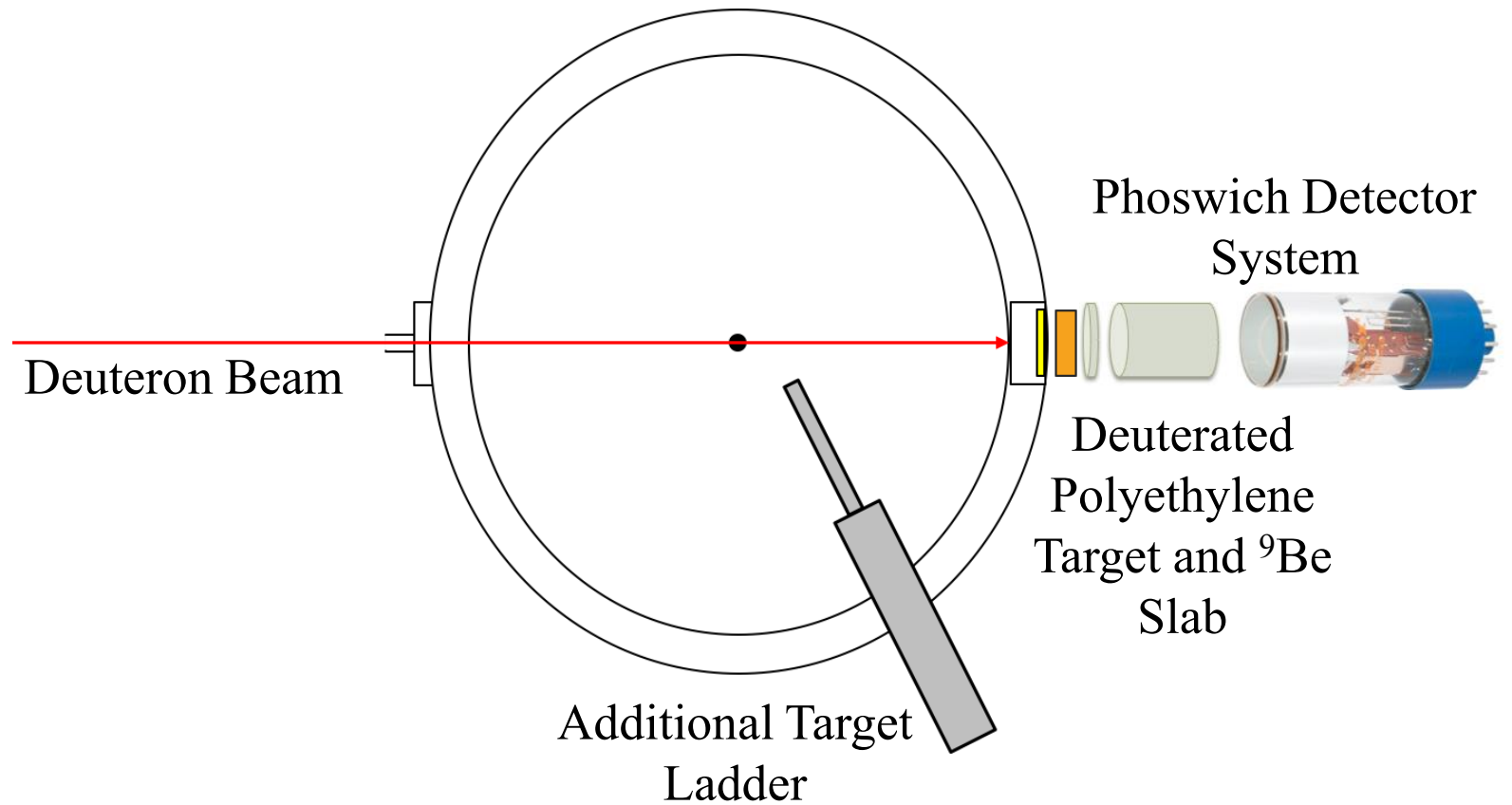
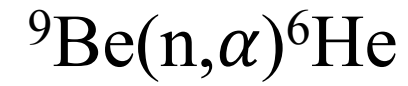
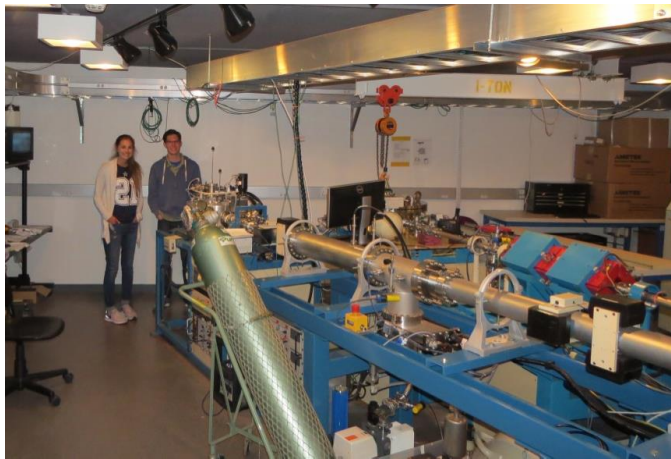
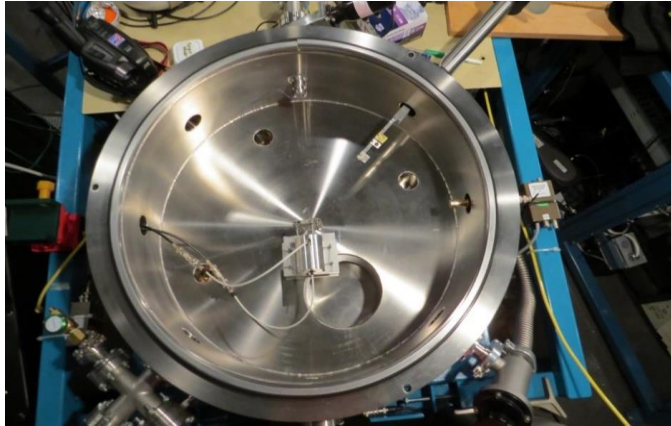
Thick, slow scintillator  
ONLY

Both thin and thick  
scintillators

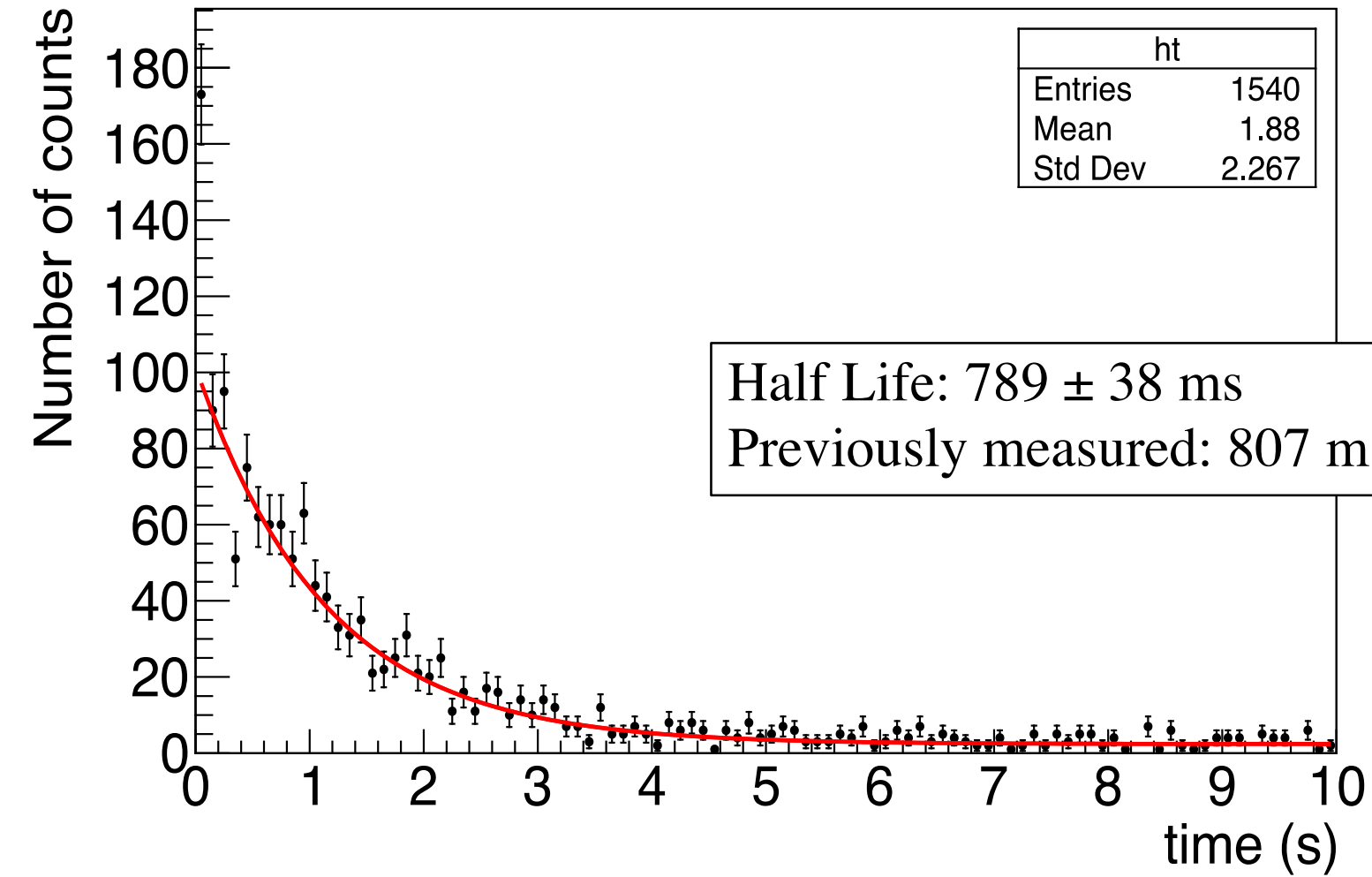




Target Chamber

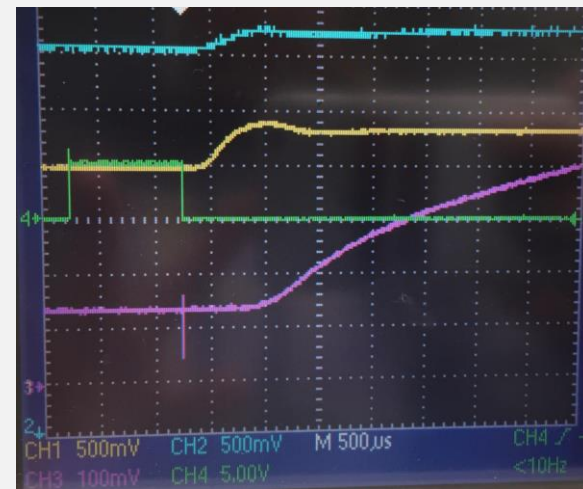
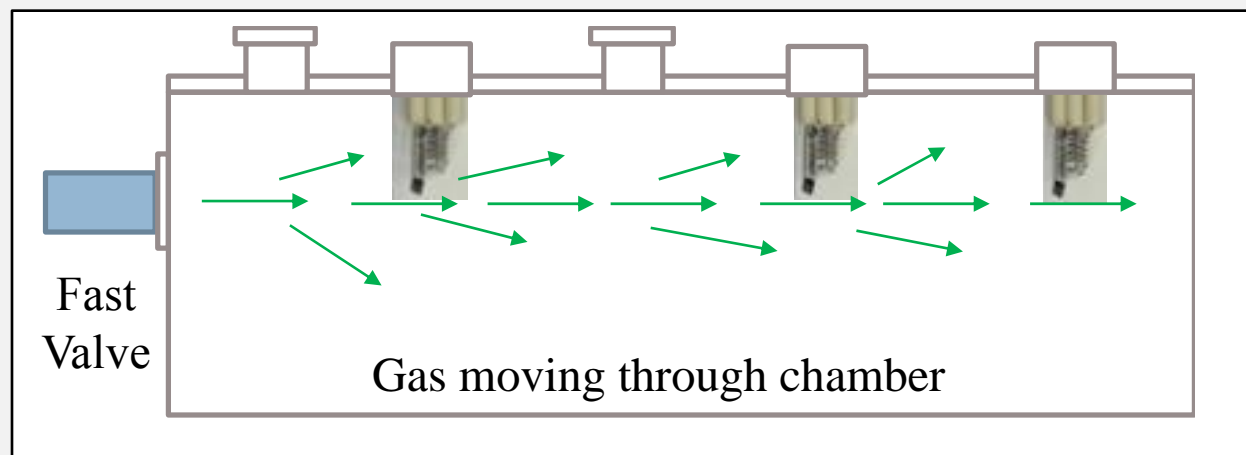
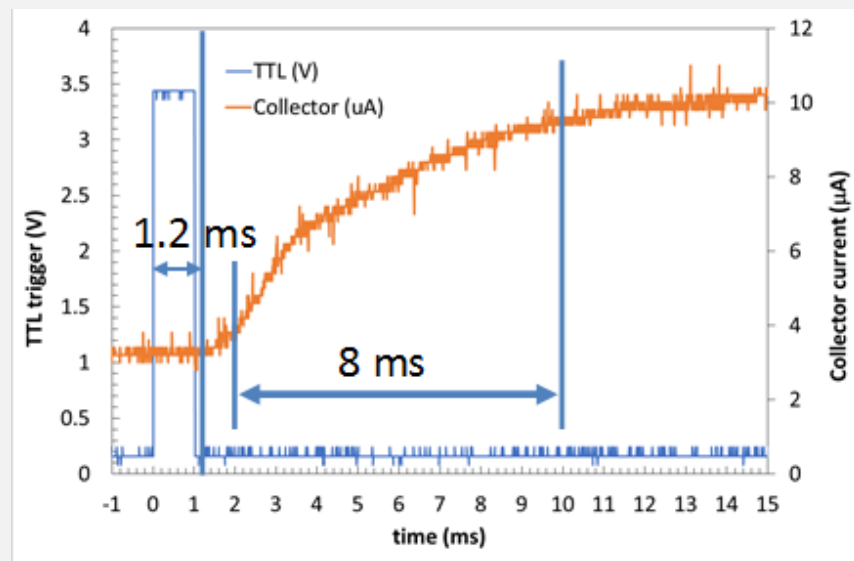
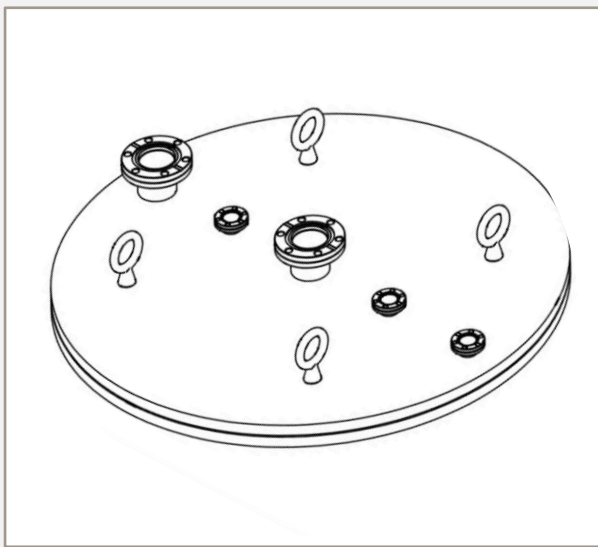


# PHOSWICH TEST EXPERIMENT: TANDEM PELLETRON

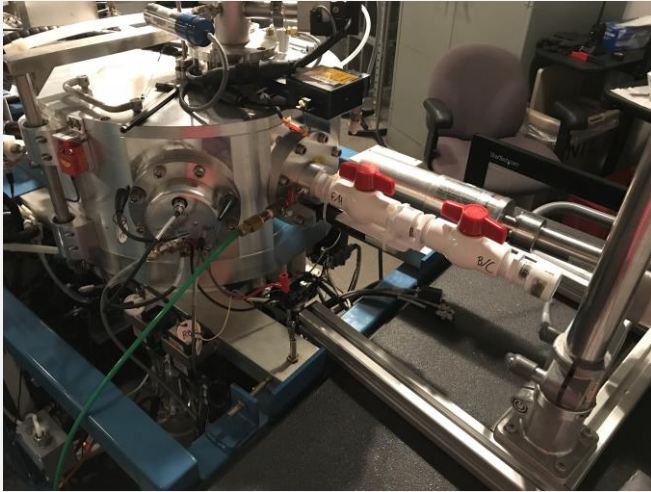


ACCELERATOR  
EXPERIMENT  
RESULTS

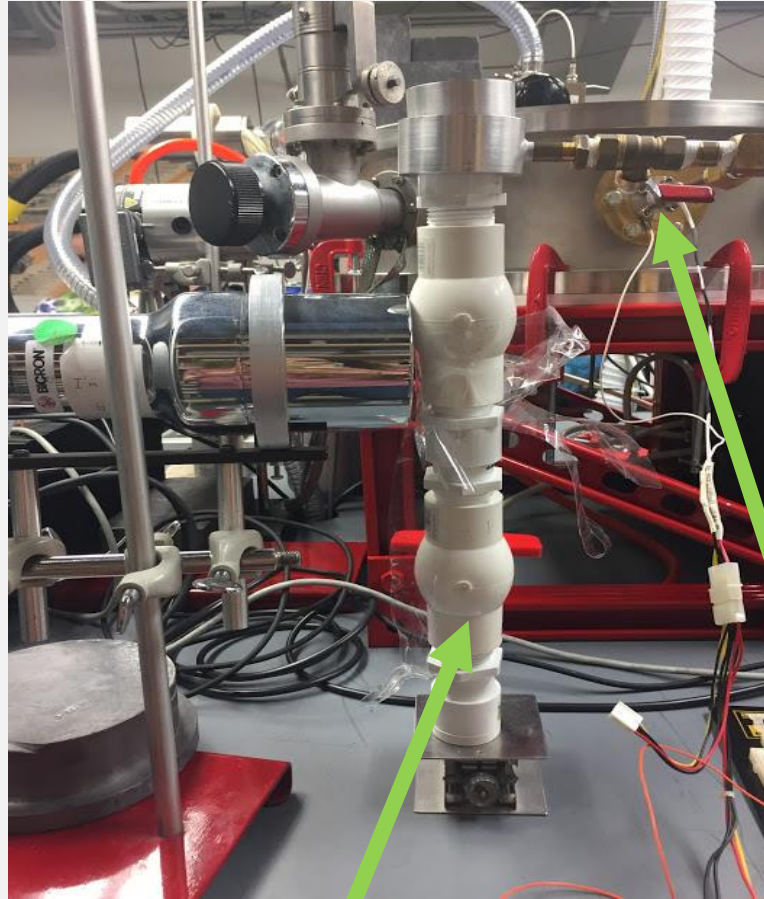
# HOW DOES THE GAS BEHAVE IN THE CHAMBER?



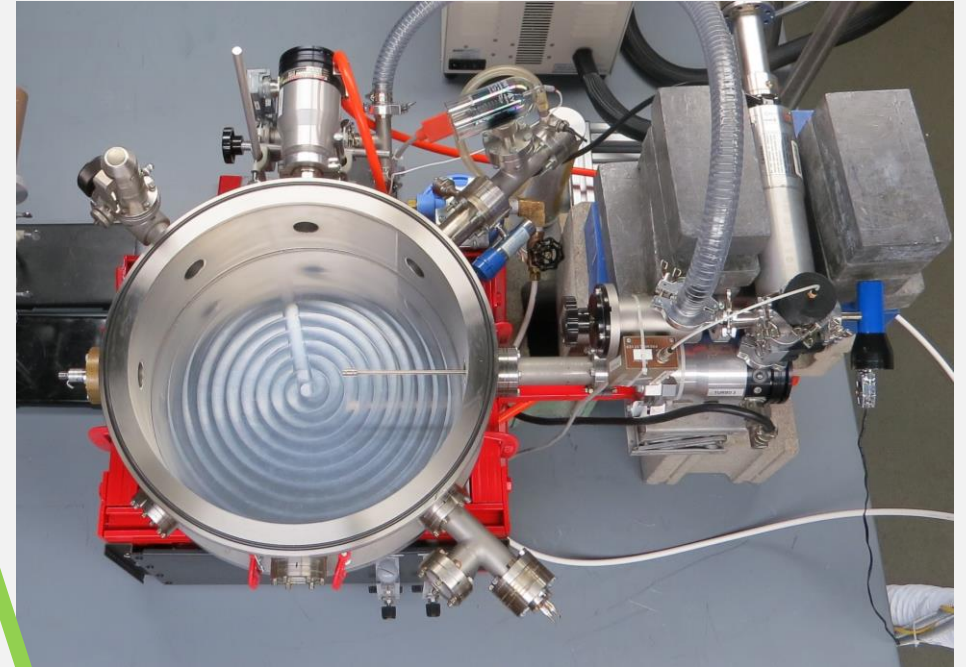
# WHAT FRACTION OF THE RADIOACTIVE GAS CAN BE TRAPPED? $^{41}\text{Ar}$ EXPERIMENT



SUNY Geneseo



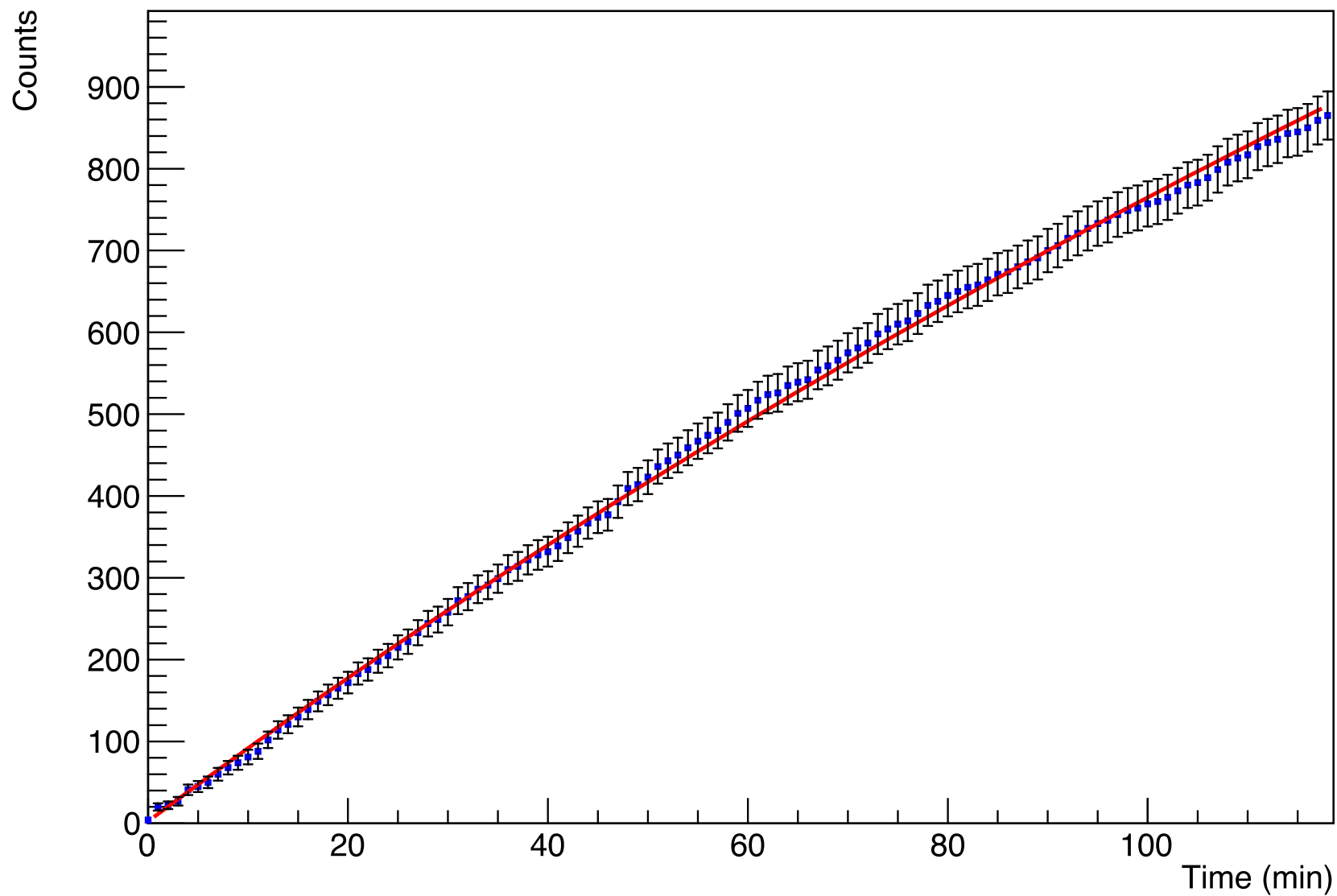
$^{41}\text{Ar}$  Gas Cell



Attachment to  
Fast Valve

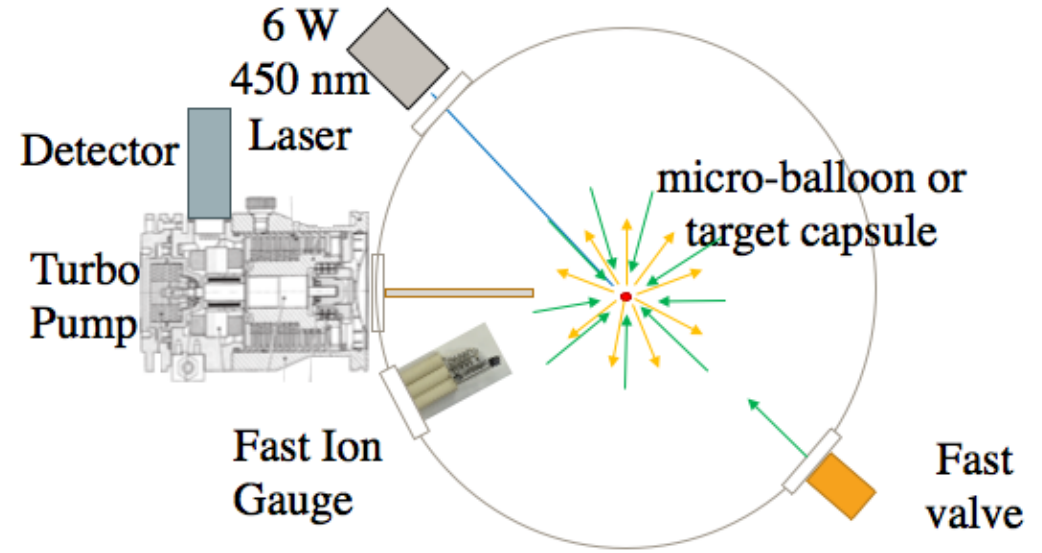
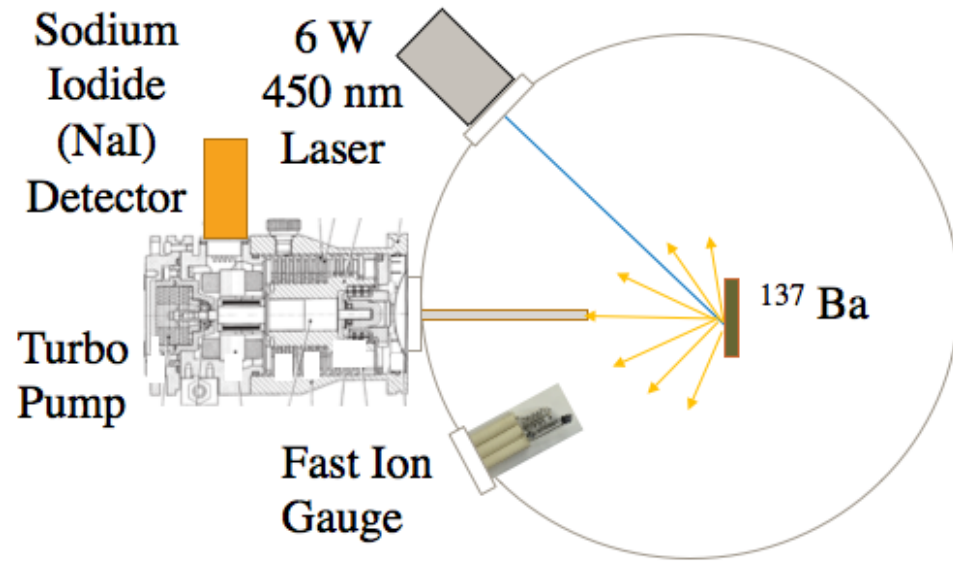


## Growth curve using HPGe detector



$^{41}\text{Ar}$   
EXPERIMENT  
RESULTS





FUTURE PLANS