

# NEUTRON DETECTORS WORKING GROUP (R. Grzywacz)

(Speakers: Rykaczewski (ORNL), Madurga(UTK), Thornsberry(UTK), Febraro(ORNL), Shirwadkar(RMD), Perez-Loureiro (UTK), Chowdhury(UMass), Siegl(ND))

**Neutron detectors will be essential to realize measurements of neutron-rich nuclei at FRIB.**

Science focus for 0-20 MeV neutrons:

**Synergy between Reactions and Decay** measurements for structure and astrophysics  
 $P_{xn}$ , strength measurement, resonances in loosely bound systems, (d,n)...

Detector needs:

- high-efficiency
- neutron-gamma discrimination
- granularity
- versatility (combined with other equipment)

Neutron **counters**:

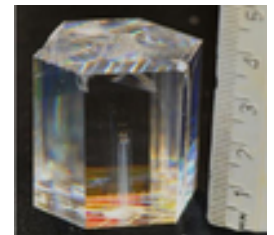
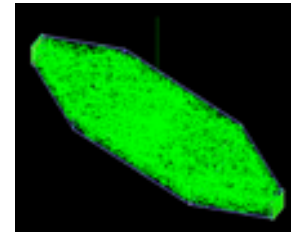
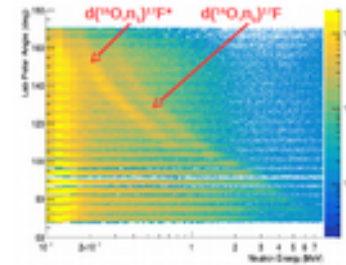
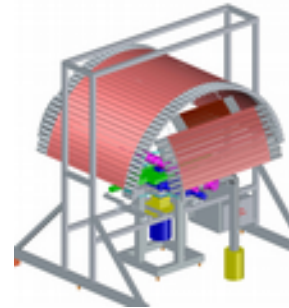
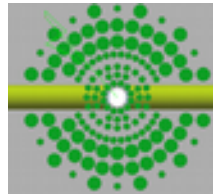
( $10^{-4}$ pps)

*Super-3He*

Neutron **energy** detectors

( $10^{-1}$  pps):

*LENDA, VANDLE, SABRE*



Development of new materials with **improved PSD**

will enhance the FRIB science opportunities

Novel detector arrays: NEXT, CLYC

