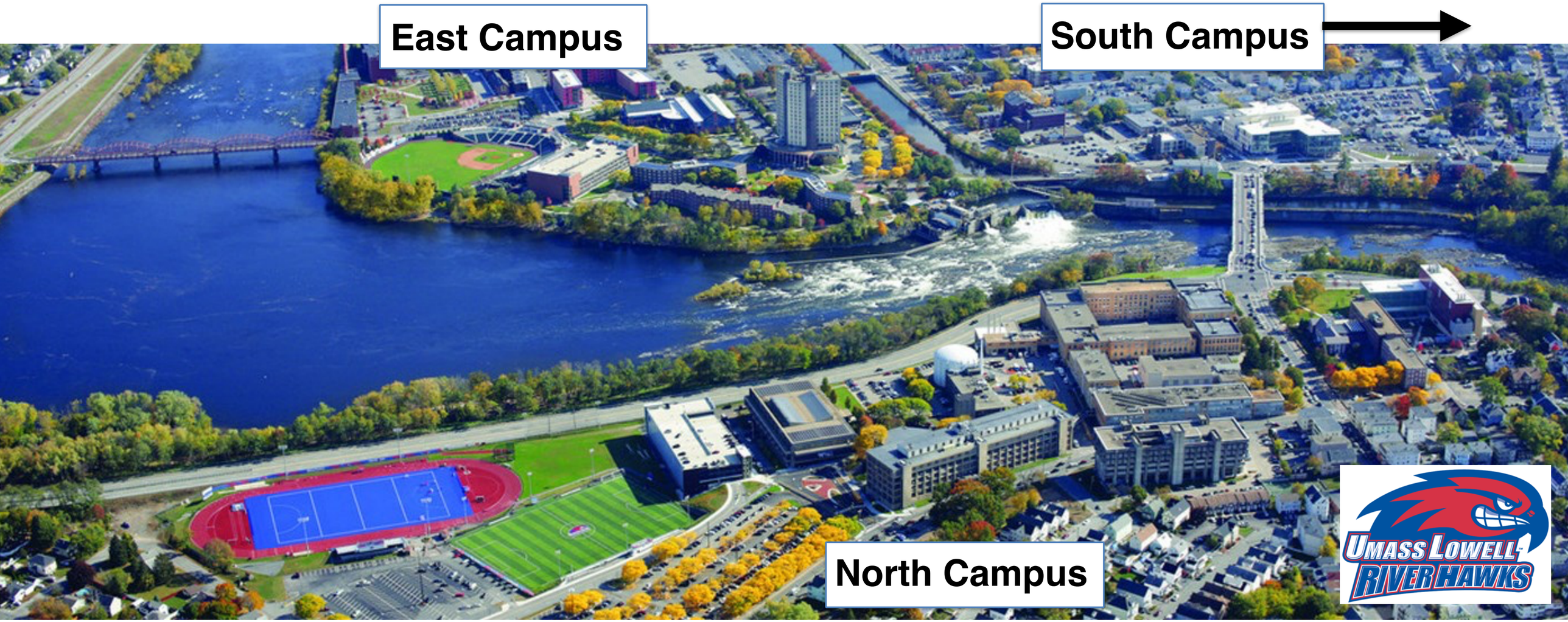
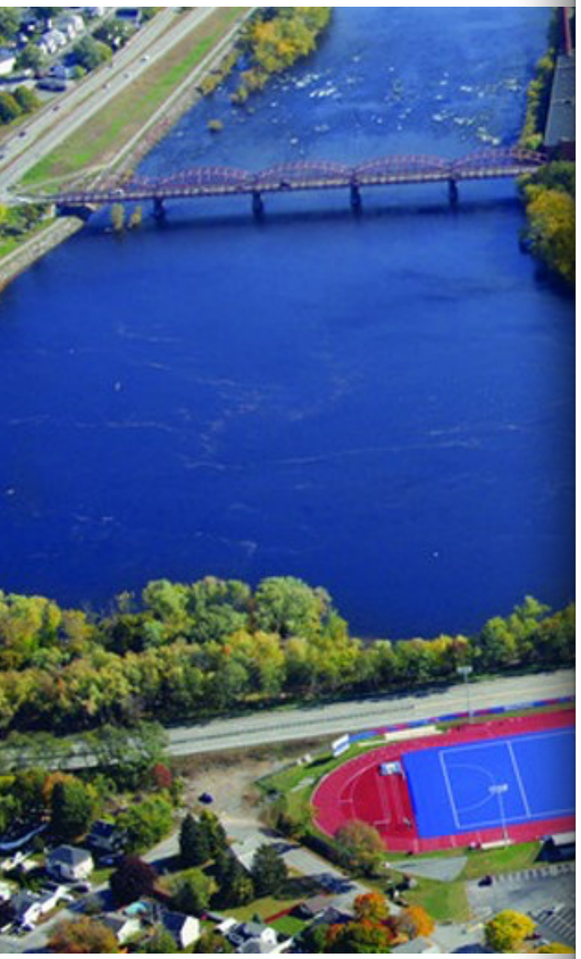
UML Campus and Radiation Laboratory



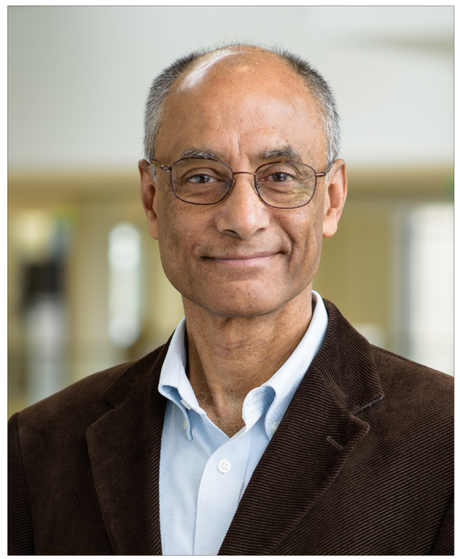
UML Campus and Radiation Laboratory



mpus

National Nuclear Security Administration

Experimental Physics Faculty



Partha Chowdhury

Marian Jandel

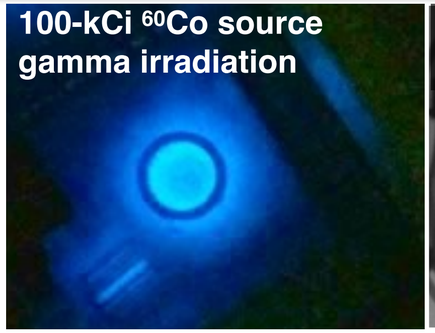
Andrew Rogers

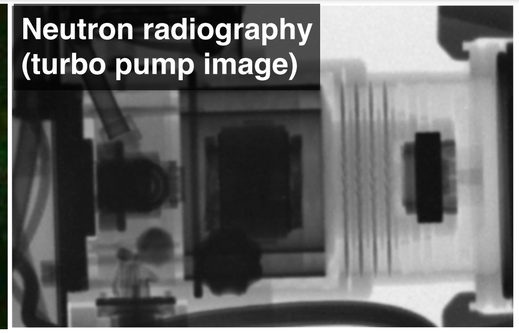
Peter Bender

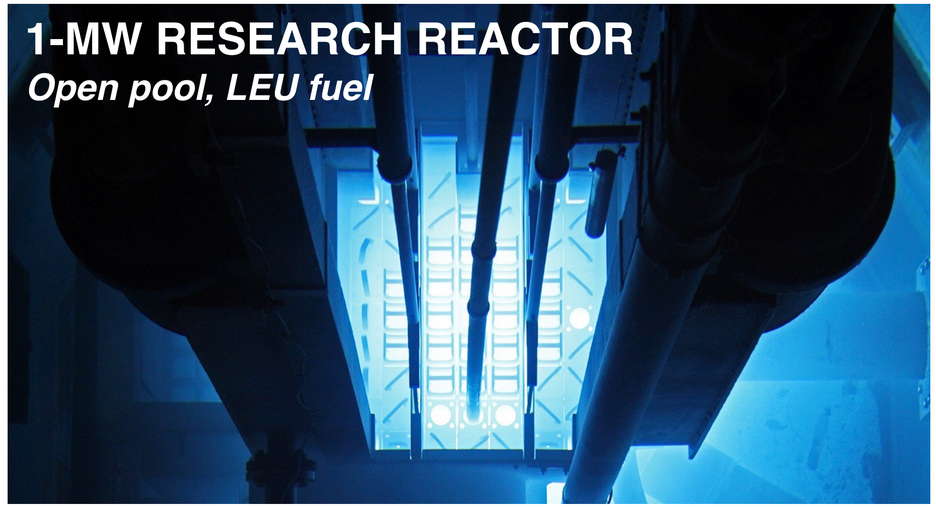
Kim Lister

- Supported mainly by the Department of Energy and the National Nuclear Security Agency
- Strong collaborations with **LANL**, **ANL**, **BNL**, and **FRIB/NSCL**
- Undergraduates: ~ 3 — 8
- Graduate students: ~ 4 — 6 plus a visiting University of Surrey student
- Post-doctoral Fellows: **Ed Lamere (Ph.D. Notre Dame) and Dan Hoff (Ph.D. Wash U.)**

Radiation Laboratory - facilities





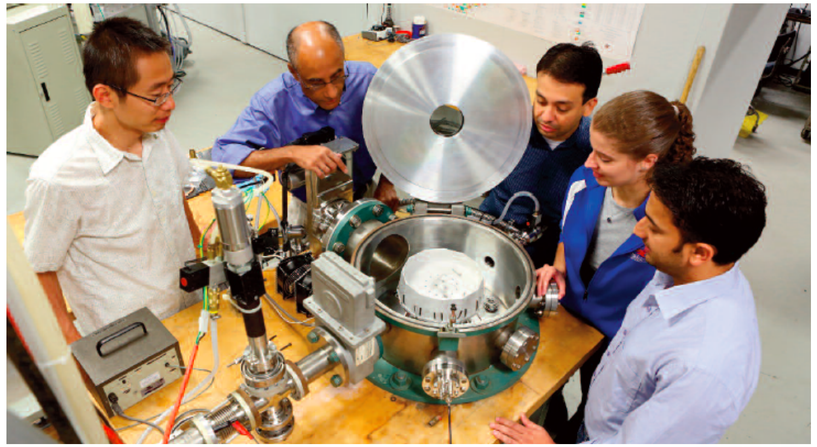


CAPABILITIES

in-core sample(~10^{13} n/cm^2/s)
graphite thermal column (~10^6 n/cm^2/s)
digital neutron radiography
hot cell with remote manipulators

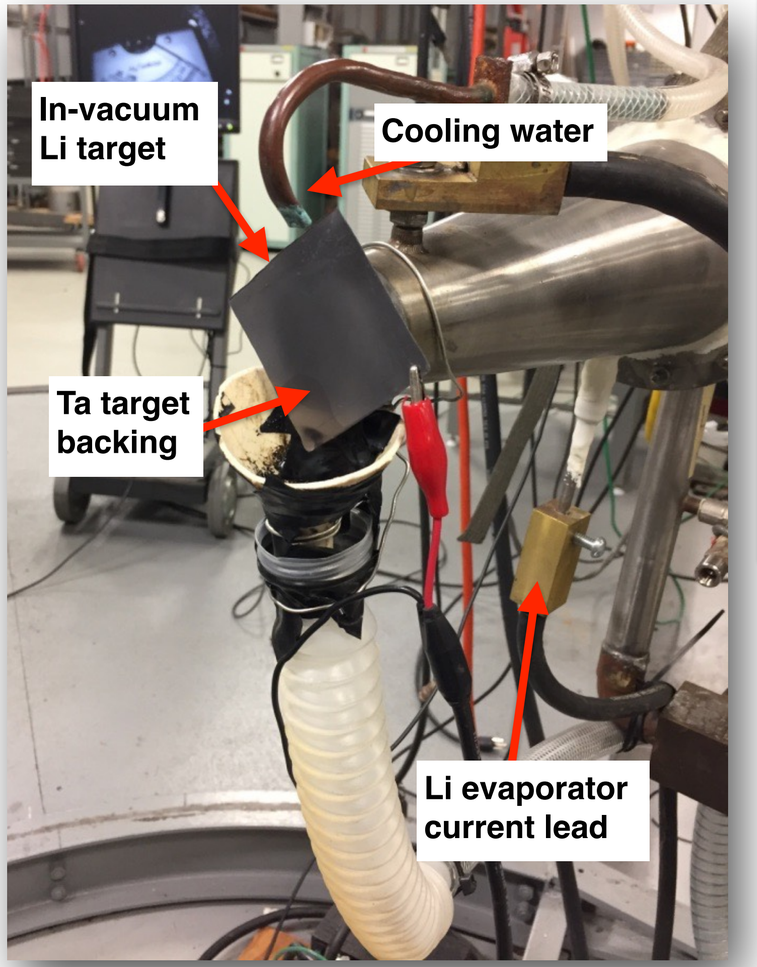
CAPABILITIES

- *p*, *d*, He, … ions
- Up to 100-μA DC beam
- Sub-ns pulsing
- Mono-energetic pulsed neutrons via ^{7}Li(*p*,*n*) reaction
- Fast-neutron beamline (goniometer, neutron scattering, ToF)
- Ion microprobe
- General purpose scattering chamber



UML Neutron Scattering Capabilities

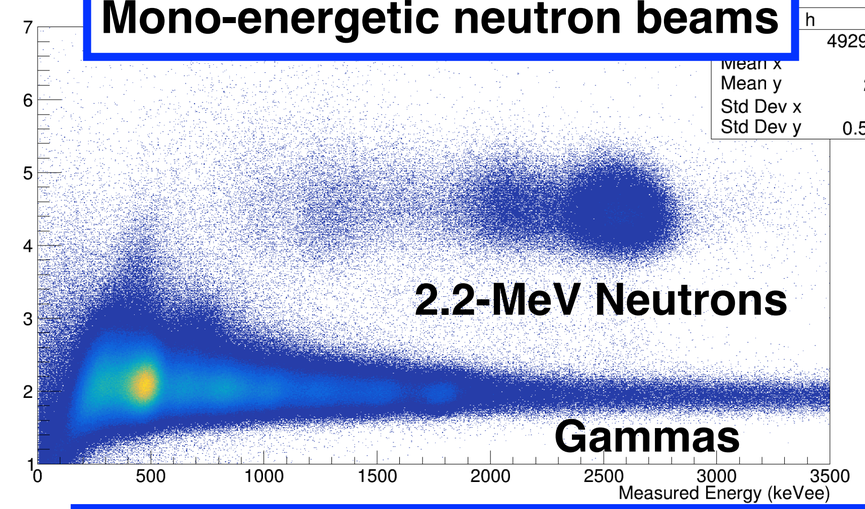
^{7}Li(p,n)^{7}Be neutron production



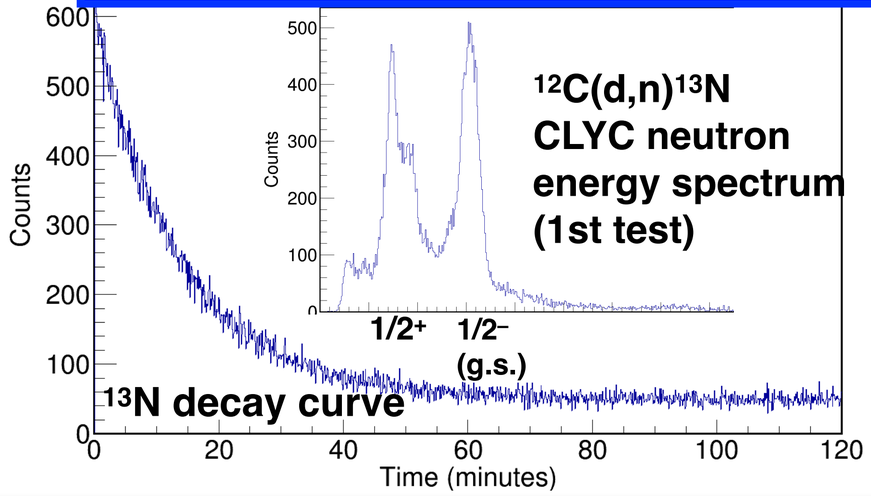
C^{7}LYC detector development

- **UML facility designed for neutron scattering.**
- “Mono-energetic” neutron beams from ^{7}Li(p,n)^{7}Be and ^{7}Li(p,n)^{7}Be* available at energies between **~30 keV and 3 MeV.**
- d-d neutrons using deuteron gas cell.
- Neutron ToF capabilities (~250 ps resolution).
- Supporting C^{7}LYC detector development and characterization.

Mono-energetic neutron beams



Deuteron-induced reactions/sources



Neutron Damage & Recovery: Segmented HPGe

- ✦Segmented large planar Ge with new contact technology.
- ✦Applications in imaging and high count rate capabilities.
- ✦Neutron damage tests and “repairability” at UML accelerator fo in-beam physics.
- ✦SBIR Phase2 grant with PHDS Co. to design a streamlined cryostat for “in-beam” spectroscopy of superheavy elements.
- ✦**Controlled dose of mono-energetic neutrons from accelerator to induce lattice damage and charge trapping.**
- ✦**In-house annealing** to assess robustness of contacts.