Nuclear Data, Computing and Optimization in Nuclear Applications
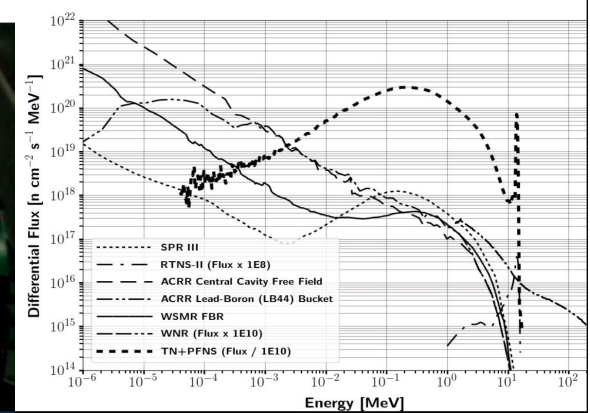
Vladimir Sobes

University of Tennessee

NSSC Nuclear Data Work Highlights
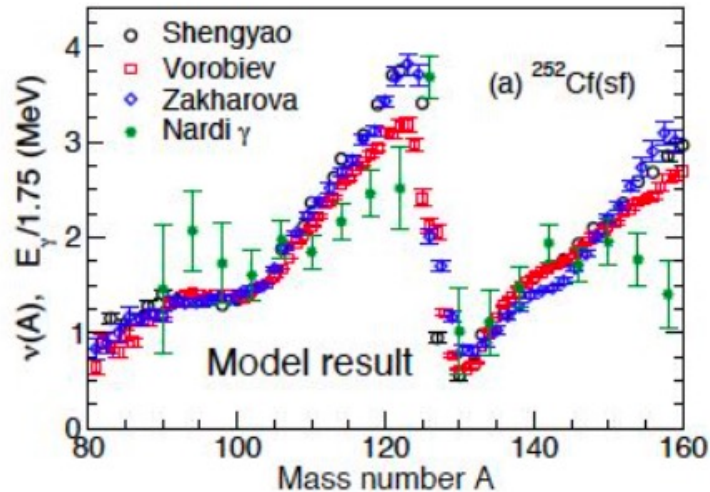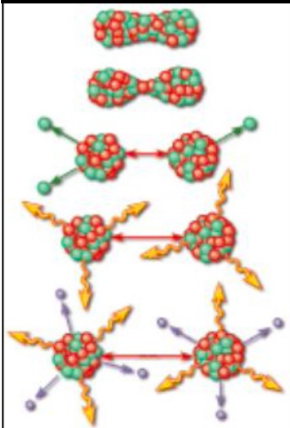

James Bevins

Using NIF to make realistic debris for post-det forensics

Bevins is now faculty at AFIT
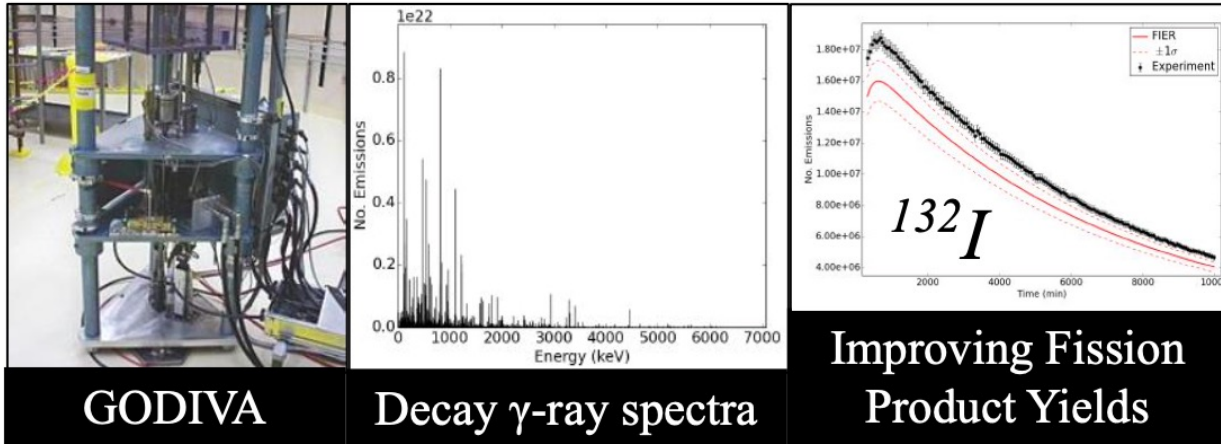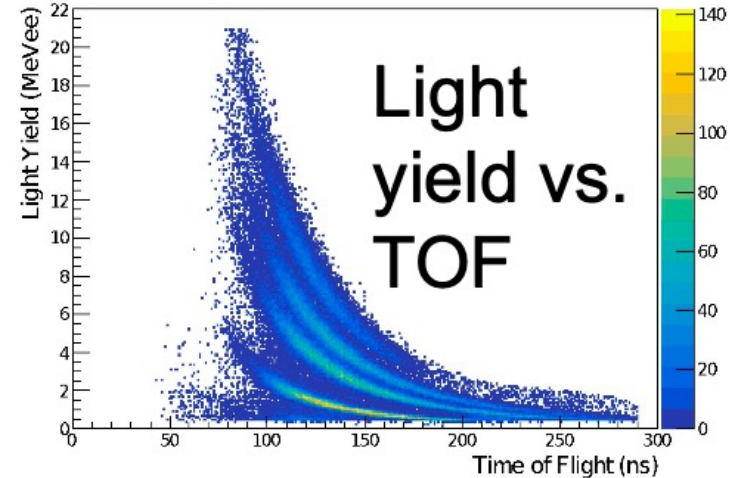

Jackson Van Dyke

Improved Fission Modeling using FREYA

NSSC Nuclear Data Work Highlights

Josh Brown

Developed a new scintillator characterization capability and helped commission a new d-breakup neutron source for (n,n') measurements

Brown is now a SNL post-doc

GODIVA | Decay γ-ray spectra | Improving Fission Product Yields

Eric Matthews
Improving Fission Product Yields and Decay Data at the same time using FIER

Our lab connections gave Eric access to GODIVA data to improve FPY & decay data

Eric starts an LLNL NNSA fellowship next year

Workshop for Applied Nuclear Data Activities

WANDA 2021		
Connecting the humans behind the nuclear data		
Day	**Session**	**Attendance**
Monday January 25	Opening Plenary + Nuclear Data 101 Lectures WANDA 2020 Session Reports	334
Wednesday January 27	**Predictive codes for isotope production** **Expanded Benchmarks and Validation for Nuclear**	298
Friday January 29	**Advanced Computing for Nuclear Data** **Intro to Nuclear Data for Space Application**	253
Monday February 1	**Nuclear Data for Advanced Reactors and Security Applications** **The Human Pipeline for Nuclear Data**	261
Wednesday February 3	Funded Project Reports WANDA 2021 Session Reports	226

UTK NSSC Work Highlights

## Jason Hayward
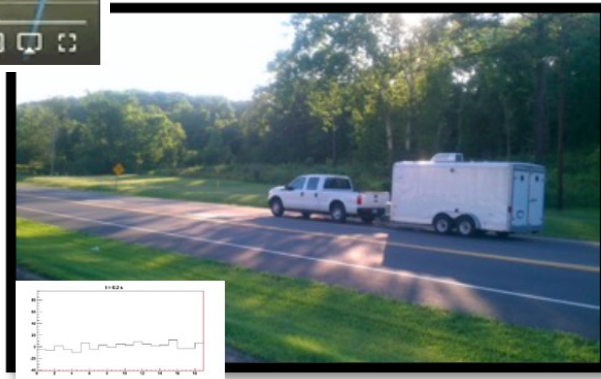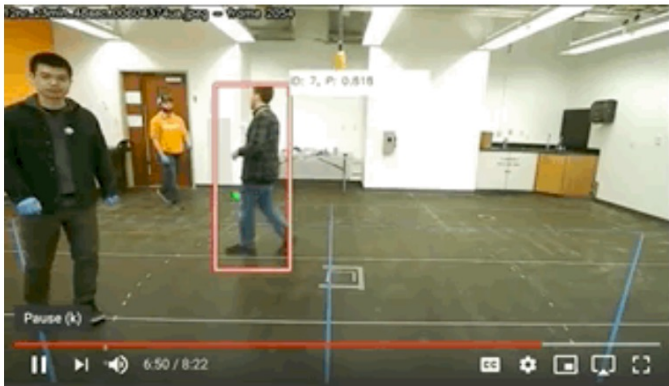
Vladimir Sobes
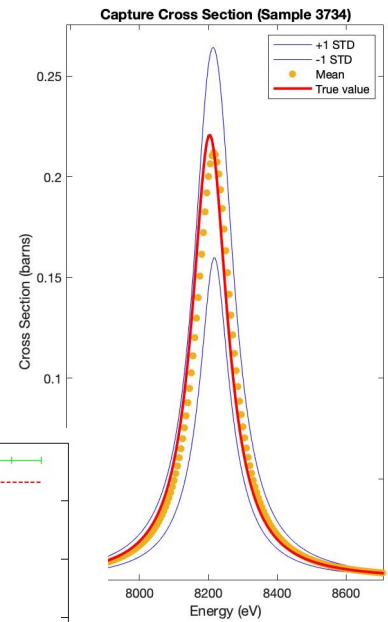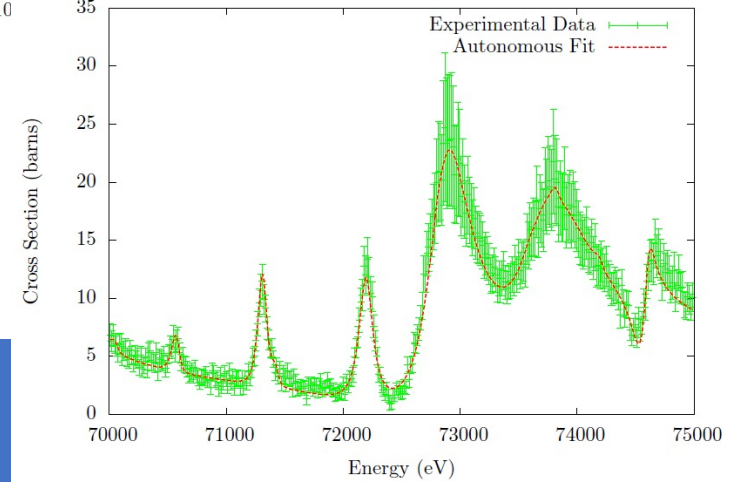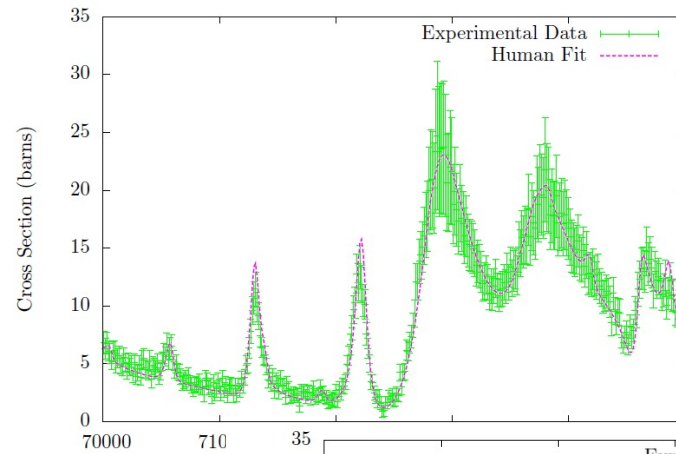
UTK Nuclear Data Highlights

Fast Neutron Source @UTK

Design, license and operate a subcritical assembly for integral cross section measurements for benchmarking, validation and uncertainty reduction.

Reconfigurable, flexible design able to replicate different fast reactor spectra.

Targeted to approximate detonation spectra.
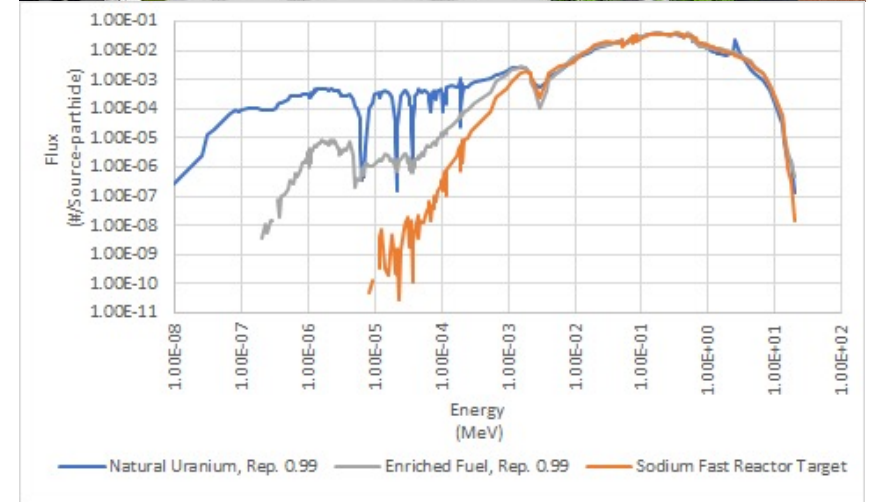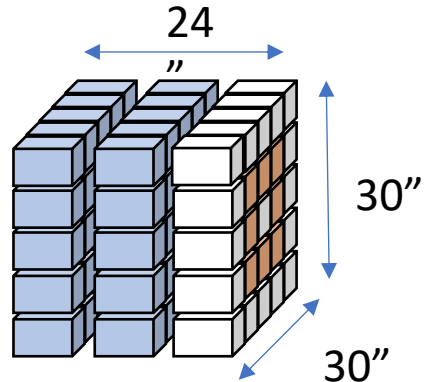
Planned Work for
Computing and Optimization in Nuclear Applications
NSSC Cross-Cutting Area

1. AI optimization of Networked Detection for Safeguards Applications.
   Supports Radiation Detection & Nuclear Instrumentation tasks and Nuclear Materials tasks

2. Artificial Intelligence-based Identification of Nuclear Resonances.
   Supports Nuclear Physics and Nuclear Data tasks

3. Neutron Spectra Tailoring Optimization for Exascale Computing
   Supports Nuclear Engineering tasks

4. Stochastic Media Radiation Transport and Nuclear Signature Analysis.

5. Characterizing Reactor Fuel Isotopics and Corresponding Effluent Releases
   Supports Nuclear & Chemical Engineering tasks

Nuclear Data Summer School