USNDP Activities, FY 17 and FY 18
Report from NIST

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FY 2017

Evaluation of the Neutron Data Standards

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FY 2017 - Cross Section Standards

- **The thermal constants:** A new evaluation was done using only microscopic data due to concerns about how well the temperatures are understood for Maxwellian data and how close the thermal spectra agree with a Maxwellian.

- **The low energy gold capture cross section:** The Maxwellian averaged cross section for Au(n,γ) at 30 keV that is used in neutron capture cross-section measurements as a reference for reactions important for astrophysics was determined accurately and is now a standard

- **Reference cross sections for prompt gamma-ray production:** Three of these reference cross sections were evaluated.

- **Very high energy fission reference cross sections:** In addition to the extension of the ^{235}U(n,f), ^{238}U(n,f) and ^{239}Pu(n,f) cross sections, Pb(n,f) and Bi(n,f) cross sections were evaluated up to 1 GeV.

- **Prompt fission neutron spectrum:** An evaluation was done for the ^{235}U(n,f) thermal neutron-induced prompt fission neutron spectrum

FY 2017 - Measurements

- A paper was presented at the ND2016 meeting on the collaborative H(n,n) angular distribution measurement at 13.9 MeV. Progress has been made on a detailed publication of that work. No further measurements are planned

FY 2018 (and beyond)

- Currently no funding - application anticipated

- For the evaluation effort, an improved code to replace GMAP using Bayesian concepts is planned. An effort will be made to improve the documentation and ease of use that have been lacking with GMAP.

- For measurements, plans are underway to use the very well determined neutron fluence now available at NIST to determine the $^{235}U(n,f)$ cross section below thermal energy. Very few absolute measurements in the thermal regions have been made and they are all quite old.