

# AGEP-T Project Description

**Brookhaven National Laboratory  
Photon Science  
NSLS-II Project Powder Diffraction (XPD) beamline**

**Project Title: Data Analysis Tool Development for the Powder  
Diffraction beamline at NSLS-II**

This document describes the work on the design and assembly of ultra-flat mosaic focal planes for advanced telescopes in requesting applications from science or engineering post docs from the Stony Brook University – Brookhaven National Laboratory AGEP-T Program.

## **Project Description**

NSLS-II at Brookhaven National Laboratory will be a new state-of-the-art, medium-energy electron storage ring designed to deliver x-ray beams with world-leading intensity and brightness.

The X-ray Powder Diffraction (XPD) beamline is among the first 7 beamlines of NSLS-II (commissioning starts June 2014). XPD will have the ability to collect diffraction data at high x-ray energies (30keV-70keV), offering rapid acquisition (sub-second) and high angular resolution capabilities at the same instrument. XPD addresses future scientific challenges in, for example, hydrogen storage, CO<sub>2</sub> sequestration, advanced structural ceramics, catalysis, and materials processing. See more at <http://www.bnl.gov/ps/nsls2/beamlines/overviews/XPD.asp>.

The proposed project is to develop a prototype workflow system for supporting data intensive XPD beamline experiments. As data outputs of several TB/day are anticipated at XPD, qualitatively new solutions for data visualization, data mining, data analysis and experimental result reporting are keys to ensure the XPD outstanding scientific output for high-end applications using fast 2D detection schemes. A preliminary suite of scripts already exists that has been developed under Python: Python X-ray Diffraction Analysis (PyXDA). A comprehensive set of functionalities needs to be implemented and tested to cover the needs of XPD for data processing and to support the management of the measurements at the XPD beamline in quasi real time.

## **Qualifications of Ideal Candidate**

Post Doc: Ph.D. in Physics or Computer Science proficient in computing science, basics in diffraction, experience with Python and databases. Works well in a collaborative environment with students and other researchers. Possesses good written and verbal communication skills.

### **For More Information contact:**

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