

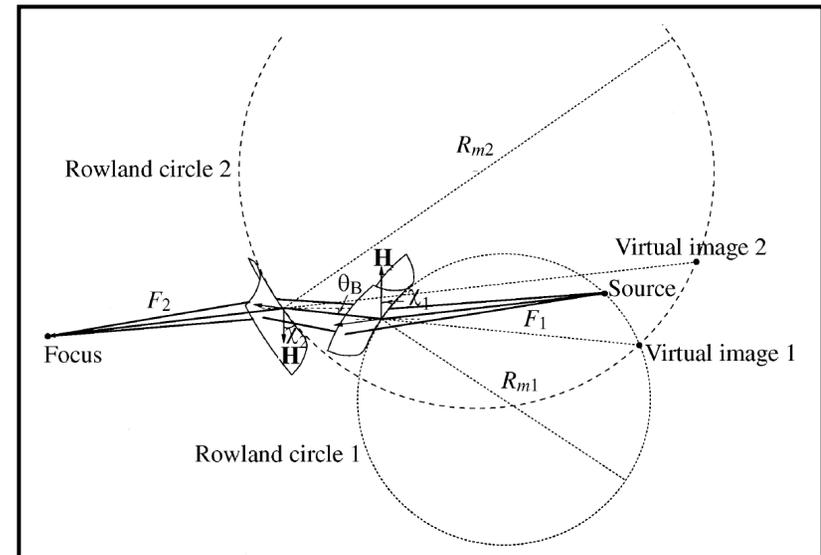
# Metrology and Instrumentation Development (MID)

## MID at NSLS-II

- This flexible beamline will enable development of novel x-ray instrumentation and methods for NSLS-II beamlines to provide cutting edge synchrotron science for years to come.
- MID can also support additional tests as needed for users from compatible fields (materials science, astronomy, etc.).

## Examples of Science Areas & Impact

- X-RAY OPTICS: Optimal performance of mirrors, crystals, gratings and refractive optics for use in imaging and spectroscopy will be proven “at-wavelength” using reflectometry, topography and interferometric methods
- DETECTORS: High efficiency, bandwidth and resolution can be reached with feedback from beamline test, ultimately delivering arrayed spectroscopic detectors and diagnostics for high-throughput diffraction, spectroscopy and imaging
- ENVIRONMENTS, POSITIONING AND COMPOUND SYSTEMS: Flexible configuration enables collaborative development of x-ray end stations for a wide variety of techniques
- POLARIMETRY AND TIMING: New techniques and devices enable advances in materials science



Constructing a fixed-exit monochromator using two sagittally bent Laue crystals. Both crystals focus the x-rays sagittally and are in the inverse-Cauchois geometry in the meridional plane. Z. Zhong et al., *J. Appl. Cryst.* **34**, 504 (2001).

## Beamline Capabilities

**TECHNIQUE(S):** white and monochromatic (focused & unfocused), soft and hard x-ray optics, and multiple optical benches for flexible test arrangements

**SOURCE:** 1.1 T 3-pole wiggler (and 0.3 T side-pole)

**ENERGY RANGE:** 50 eV – 50 keV

**FAN SIZE:** 2 mrad (130 mm at 65 m)