

## **Ultraprecision Motion Control Technique for High-Resolution X-ray Instrumentation\***

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### **Abstract**

With the availability of third-generation hard x-ray synchrotron radiation sources, such as the Advanced Photon Source (APS) at Argonne National Laboratory, x-ray inelastic scattering and x-ray nuclear resonant scattering provide powerful means for investigating the vibrational dynamics of a variety of materials and condensed matter systems. Novel high-resolution hard x-ray optics with meV energy resolution requires a compact positioning mechanism with 20- to 50-nrad angular resolution and stability. In this paper, our technical approach to this design challenge is presented. Sensitivity and stability test results are also discussed.

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*Sample*