Progress of the High-Precision Positioning Mechanism Development at the Advanced Photon Source*

D. Shu, T. S. Toellner, E. E. Alp, J. Maser, D. Mancini, B. Lai, I. McNulty, Z. Cai, P. Lee, F. Carrera, S-H. Lee, Y. Han, and C. Preissner

Experimental Facilities Division, Advanced Photon Source
Argonne National Laboratory, 9700 S. Cass Avenue, Argonne, IL 60439, U.S.A.
Phone: 630-252-4684; Fax: 630-252-9350
E-mail: shud@aps.anl.gov

Abstract

There are many challenging tasks in the design of beamline instrumentation that relate to high-precision positioning mechanisms for users at third-generation synchrotron radiation sources, such as the 7-GeV Advanced Photon Source (APS). Over the last two years, progress has been made in the development of novel mechanisms with high positioning resolution and high stability at the APS. Applications include: high-energy-resolution monochromators, x-ray microprobe scanning stages, and a sample-exchange automation system for x-ray cryo-biocrystallography.

In this paper, the particular design upgrades, as well as the new mechanism design specifications, are summarized.

Keywords: high-precision, high-resolution, positioning mechanism, actuator, stage

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