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Introduction

The conference *Adaptive X-ray Optics IV* met 28 August, in San Diego, California, as part of the **SPIE Optics + Photonics 2016** international symposium ***Optical Engineering + Applications***. As with the previous three biannual conferences in this series, its objectives were to provide an effective forum for discussion of recent progress in adaptive or active x-ray optics and to nurture interactions amongst engineers and scientists developing and utilizing active x-ray optics for diverse applications. The papers presented within the four sessions of this conference addressed LIGHT-SOURCE APPLICATIONS, ASTRONOMICAL APPLICATIONS, DEVICE DEVELOPMENT, and MODELS AND ALGORITHMS.

LIGHT-SOURCE APPLICATIONS (Session 1) reported on development and application of active or deformable mirrors for use at synchrotron or x-ray free-electron-laser (XFEL) light-source facilities. The papers in this session described focusing and collimating using piezoelectric deformable mirrors, figure correction using spring actuators, and compensation for thermal drifts using mechanical benders.

ASTRONOMICAL APPLICATIONS (Session 2) reported on the development of active grazing-incidence optics for x-ray astronomy, with the goal of producing large-area sub-arcsecond telescopes. The first paper in this session provided an overview of approaches for figuring thin x-ray mirrors and for post-fabrication correction—including static and active methods. The subsequent papers reported on research in piezoelectric actuated thin glass mirrors.

DEVICE DEVELOPMENT (Session 3) addressed technology development, fabrication, and characterization of surface-tangential actuators for adjustment of thin x-ray mirrors. The papers in this session reported on development of piezoelectric and magnetostrictive actuation technologies, as well as refinements in slumping thin glass substrates for active x-ray mirrors.

MODELS AND ALGORITHMS (Session 4) reported on metrology, analytic, and numeric methods applied to controlling active x-ray optics. The papers in this session addressed beam expansion and control of deformable mirrors for light-source applications, as well as in-space modification of the optical prescription of an x-ray telescope.

Overall, the presentations in this Conference demonstrate a gradual growth in the utilization of active x-ray optics for light-source applications and progress in developing active-optics technologies for x-ray telescopes. While specific requirements and constraints differ between (ground-based) light-source facilities and (in-space) x-ray telescopes, there are nonetheless many similar hardware, software, and theoretical issues.

We thank the Conference Program Committee for helping to organize the technical program and for fostering broad participation, and the session chairs and presenters for a successful and stimulating conference. We also appreciate the efforts of the SPIE staff in organizing and implementing the Conference and in publishing these Proceedings.

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