

## **X-ray optics for third-generation synchrotron radiation sources\***

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High brilliance third-generation synchrotron radiation sources simultaneously provide both a need and an opportunity for the development of new x-ray optical components. The high power and power densities of the x-ray beams produced by insertion devices have forced researchers to consider novel, and what may seem like exotic, approaches to the mitigation of thermal distortions that can dilute the beam brilliance delivered to the experiment or next optical component. Once the power has been filtered by such high heat load optical elements, specialized components can be employed that take advantage of the high degree of brilliance. This presentation will take a somewhat parochial view of optics developments and discuss those components that have been designed, fabricated, and tested at the Advanced Photon Source, starting with high heat load components and followed by examples of several specialized devices, such as a milli-eV resolution (in-line) monochromator and a phase contrast Fresnel zone plate with submicron focusing capability.

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