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## **Cryogenically cooled optics for high-heat-load applications**

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The use of cryogenically cooled monochromators looks to be a very promising possibility for the Advanced Photon Source. This statement has recently been bolstered by several experiments performed on beamlines at the ESRF and CHESS. At the ESRF, several crystal geometries have been tested that were designed for high power densities ( $>150 \text{ W/mm}^2$ ) and moderate total absorbed powers ( $<200$  watts). These geometries have proven to be very successful at handling these power parameters with measured strains less than or equal to 1 arc second. The experiments performed at CHESS were focused on high total power ( $>1000$  watts) but moderate power densities. As with the previously mentioned experiments, the crystals designed for this application performed superbly with no measurable broadening of the rocking curves on the arc-second level. These experiments will be summarized, and, based on these results, performance of cryogenic monochromators for the APS will be assessed.

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