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 Abstract

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Design optimization of a six meter toroidal grating monochromator

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Abstract

We summarize the results of a comprehensive ray tracing study of a 6-m toroidal grating monochromator. The ray tracing program incorporates a realistic characterization of the synchrotron radiation source as well as the set of holographically ruled toroidal gratings. Several optical configurations consisting of ellipsoidal mirrors and toroidal mirrors are studied including options which incorporate a translating exit slit. The result of the study is an optimized optical design which yields excellent energy resolution and transmitted flux over the applicable energy range (20–180 eV).

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