

Abstract Submitted
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Thin Diamond Radiator Fabrication for the GlueX Experiment¹

BRENDAN PRATT, University of Connecticut — The GlueX experiment at Jefferson Lab requires 20 m diamond radiators for photon beam production via coherent bremsstrahlung with mosaic spread on the order of 20 r rms. With current diamond thinning techniques, one can produce 20 m diamonds of sufficient area, but these diamonds have been shown to have rocking curve widths orders of magnitude worse than this figure. The UConn nuclear physics group has developed the capability to mill monocrystalline diamond to arbitrary thickness profiles using laser ablation with a high-power pulsed UV laser. Surface profiles and rocking curve measurements are presented which demonstrate that this process results in diamond radiators which meet the GlueX criteria for thickness, flatness, and crystal mosaic spread.

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