

Abstract Submitted
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Extending crystal options in x-ray polarization splitting¹ NINO PEREIRA, Ecopulse. Inc, MATTHEW WALLACE, RADU PRESURA, University of Nevada, Reno — Anisotropy in a plasma, as may be produced by some anisotropic heating mechanism like an electron beam possibly accelerated by a laser, can sometimes be inferred from the polarization of the plasma's x-rays. The polarization is the difference between two linearly polarized spectra. These are usually obtained with two diffracting crystals in two different locations, hence not necessarily from the same plasma. Interweaving the two crystals [1], as is possible when crystals have threefold symmetry, ensures that the two polarized spectra come from the same radiation source. This paper discusses how crystals of the right type could be used for polarization splitting even though they may not have been cut expressly for the purpose. With the proper mounting common high quality but low-cost crystals such as Si (111) can be used for polarization splitting, and even quartz crystals intended for polarization-splitting could be used with unanticipated photon energies in an asymmetric orientation.

[1] E O Baronova and M M Stepanenko, "A novel x-ray polarimeter based on hexagonal crystal, for application to thermonuclear fusion experiments," Plasma Phys. Control. Fusion 45 1113 (2003)

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