

**X-RAY DIAGNOSTICS FOR PLASMA
TEMPERATURE MEASUREMENT ON SHIVA STAR***

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Arrays of Si PIN diodes are fielded on radiation producing experiments on the Shiva Star pulsed power generator at AFRL's Directed Energy Directorate. This work is a continuation of earlier work done on Shiva Star. Each diode is filtered to respond to a part of the band of interest and the signals are then deconvolved to generate the radiation spectrum as a function of time. The plasma temperature may be inferred from this method, assuming Bremsstrahlung radiative processes, and impurities may be detected by a departure from the mean temperature.

This diagnostic may be extended to other types and numbers of detectors.

1. J.H. Degnan, W.L. Baker, P.J. Turchi, "Imploding Liner Research at the Weapons Laboratory", 2nd International Conference on Dense Z-Pinches, Laguna Beach, CA, 1989, pp. 34 - 54.

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