

Soft X-Ray and Radiated Power Measurements on PEGASUS¹ M.P. KOZAR, D.J. BATTAGLIA, S.P. BURKE, R.J. FONCK, M.L. REINKE, G.R. WINZ, University of Wisconsin-Madison — Understanding power losses and confinement is important to achieving high β_e plasmas at low aspect ratios in the PEGASUS ST and to contributing to the spherical torus database. To that end, new diagnostic systems are being deployed on the experiment. Two tangentially viewing, 16-channel XUV diode arrays will provide radiation power loss rate profiles in the plasma midplane. This profile is combined with a fitted plasma equilibrium to determine the total radiation losses. A novel silicon-drift-detector-based pulse height analyzer (PHA) will determine the electron temperature by continuum measurements from the 1-3 keV region. Direct digitization and fitting of individual photon events minimize pileup effects and dead-time losses. Count rates up to 500 kcounts/sec will allow $T_e(t)$ measurements with a few-ms time resolution. A T_e profile can be obtained on a shot-to-shot basis. Finally, the conceptual design of a second generation very-high sensitivity SXR 2-D tangential imaging system is under development for determination of $J(r)$.

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Prefer Oral Session
 Prefer Poster Session

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\begin{document}
\Title{Soft X-Ray and Radiated Power Measurements on {\sc Pegasus}}
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\begin{abstract}
Understanding power losses and confinement is important to
achieving high  $\beta_t$  plasmas at low aspect ratios in
the {sc Pegasus} ST and to contributing to the spherical
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sensitivity SXR 2-D tangential imaging system is under
development for determination of  $J(r)$ .
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