Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Scaling of radiation yield from wire array Z-pinch L.I. RUDAKOV, Icarus Research, A.S. CHUVATIN, Ecole Polytechnique, France, A.L. VELIKOVICH, Plasma Physics Division, Naval Research Laboratory — Wire-array Z-pinch plasmas, being inhomogeneous at small scales, generate extremely reproducible radiation pulses at implosion. Non-linear resistivity of the strongly inhomogeneous plasma may exceed the classical Spitzer's value due to the Hall effect that drives fast penetration of magnetic field along the low dense plasma structures inside the array. This resistivity enhancement explains high experimental efficiency of magnetic energy conversion into radiation, the characteristic peak-on-pedestal shape of the x-ray pulse that starts before the stagnation of the main mass, and a substantial trailing mass left behind the implosion front. We suggest the scaling of the wire array Z-pinch radiated power, where the enhanced resistivity generates the pedestal $\sim I^4/M^2$ and kinetic energy of imploding plasma gives the peak $\sim I^2$ on the pedestal (I and M are the current and imploding mass). Fitting the scaling to the existing experimental data and recommendations for the future experiments will be presented.

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Date submitted: 21 Jul 2005 Electronic form version 1.4