

Abstract Submitted
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A short-pulse mode for the SPHINX LTD Z-pinch driver
THIERRY D'ALMEIDA, FRANCIS LASSALLE, FREDERIC ZUCCHINI, AR-
NAUD LOYEN, ALAIN MORELL, CEA, ALEXANDER CHUVATIN, Ecole Poly-
technique — The SPHINX machine is a 6MA, 1 μ s, LTD Z-pinch driver at CEA
Gramat (France) and primarily used for studying radiation effects. Different power
amplification concepts were examined in order to reduce the current rise time with-
out modifying the generator discharge scheme, including the Dynamic Load Current
Multiplier (DLCM) proposed by Chuvatin [1]. A DLCM device, capable of shaping
the current pulse without reducing the rise time, was developed at CEA. This device
proved valuable for isentropic compression experiments in cylindrical geometry [2].
Recently, we achieved a short pulse operation mode by inserting a vacuum closing
switch between the DLCM and the load. The current rise time was reduced to \sim 300
ns. We explored the use of a reduced-height wire array for the Dynamic Flux Ex-
truder in order to improve the wire array compression rate and increase the efficiency
of the current transfer to the load. These developments are presented. Potential
benefits of these developments for future Z pinch experiments are discussed.

[1] A.S. Chuvatin, “Dynamic Current Multiplier”; 14th Symposium on High Current
Electronics, Tomsk, Russia, pp 232-235 (2006).

[2] T. d’Almeida *et al*, *Phys. Plasmas*, **20**, 092512-1 092512-16 (2013).

Thierry d’Almeida
CEA

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