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Collapsing of Thick-Walled Cylinders Using Electro-Magnetic Driving Forces ZEV LOVINGER, AVI RIKANATI, RAFAEL, P. O. Box 2250, Haifa, Israel, DANIEL RITTEL, Faculty of Mechanical Engineering, Technion - Israel Institute of Technology, 32000, Haifa, Israel, ZVI ROSENBERG, RAFAEL, P. O. Box 2250, Haifa, Israel — The Thick-Walled Cylinder technique, reported in the literature, uses explosive loading to enforce collapsing of the cylindrical sample. This experimental set-up has been established as a controlled and repeatable technique to create and study multiple adiabatic shear bands. Searching to establish a simpler experimental platform to perform large sets of experiments, we have designed an Electro-Magnetic (EM) set-up for the collapsing of thick walled cylinders. The EM set-up is based on a pulsed current generator using a capacitor bank system. The specimen is an assembly of coaxial cylinders, where the inner and outer cylinders, each attached to an opposite pole, are short-circuited. Upon discharge, a high current flows through the cylinders, in *opposite* directions, creating repulsive magnetic forces between them. This work presents the design procedure of the specimens using numerical simulations and some experimental results for SS304L thick-walled samples, using this set-up. The spatial distribution of the multiple adiabatic shear bands in these experiments is in good agreement with that reported in the literature for the explosive driven experiments with a similar material.

Zev Lovinger
RAFAEL, P. O. Box 2250, Haifa, Israel

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