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**Simulation of multiple shear-band formation in collapsing cylinder experiments** ZEV LOVINGER, YEHUDA PARTOM, RAFAEL, P. O. Box 2250, Haifa, Israel — This work presents 2D numerical simulations of shear-band formation in collapsing Thick Walled Cylinder experiments with 304L stainless steel. We use a simple shear-failure model which incorporates a positive feedback mechanism. Both global behavior and shear band evolution are examined. The calculated global behavior compares well with the experimental results. The calculated shear-bands follow the patterns of self organization demonstrated in experiments, with a good quantitative agreement with the observed final spatial configuration. The calculations reveal a clear spacing between initiation sites at the inner surface of the cylinder. The evolving shear-bands, having a width of several mesh elements in which strength decreases to zero, develop outwards in spiral paths while maintaining an angle of 45 degrees to the radial direction. Interactions between shear-bands, either by direct contact or through relief waves, result in competitive growth, eventually leading to a typical distribution of lengths and spacing. The spacing at the initiation stage and at the matured developed stage is quantitatively compared with existing analytical models.

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