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The Formation and Stretching of Bi-material Shaped Charge Jets<sup>1</sup> JOHN CURTIS, AWE Aldermaston, Reading, RG7 4PR, UK, FRANK SMITH, ALEX WHITE, Department of Mathematics, University College London, Gower Street, London WC1E 6BT, UK — The equations for the formation of a bimaterial jet from a laminated shaped charge liner are presented. A coupled pair of boundary-value problems is then established for an idealised stretching jet in cases where the outer material occupies a hollow uniform cylinder surrounding the inner material in the uniform hollow. This is done first where the materials are inviscid fluids. Making the assumption that the axial velocity in each part of the jet is the same and linearly decreasing from the front to the rear of the composite jet, solutions for the pressure field in each part are obtained. The problem is then reformulated where the two materials are both perfectly plastic solids but with differing densities and yield strengths. The equations of plastic flow (Levy-Mises with von-Mises yield criterion) are solved for each material to derive the stress field in both parts of the jet. These analytical solutions offer a basis for future stability and target penetration studies.

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