Immersed boundary method modeling of elastic capsules in superpositions of plane and axisymmetric extensional flows ALEX SZATMARY, CHARLES EGGLETON, UMBC — Physics of elastic capsules in fluid is important to understanding biology, especially microcirculation, and is also useful in design of microfluidic devices. Linear flows, such as shear, plane extensional, and axisymmetric extensional flows, appear in many microfluidic applications, so understanding their effect on the deformation of capsules is necessary. The rotational component of the flow has no effect on deformation, and is neglected. The velocity gradient, not magnitude, leads to deformation, so the velocity magnitude is likewise neglected. Under eigendecomposition, any linear flow can then be represented as a superposition of a plane extensional and a plane axisymmetric flows, for analysis of capsule deformation. Computational modeling results using the immersed boundary method are reported.

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