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"Jumping" of Bubbles in Viscoplastic Fluids with Elasticity[1] DIMITRIOS FRAGGEDAKIS[2], YANNIS DIMAKOPOULOS, JOHN TSAMOPOULOS, University of Patras — Recently, it has been shown that phenomena known to be observed in viscoelastic liquids (e.g. the negative wake formation past deformable or rigid obstacles, cusp formation in bubbles), are present in elastoviscoplastic materials too, due to elasticity effects, Fraggedakis et al., *Soft Matter* (2016). Based on the numerical results for bubbles in viscoelastic materials, Fraggedakis et al. *J. Fluid Mech.* (2016), we focus our study on the rise of a confined air bubble in materials which exhibit elasto-viscoplastic behavior. Based on the rheological data by Mougin et al. (2012), the present study examines the conditions under which cusped bubble shapes are evident in yield stress materials. Moreover, the distance of the yield surface to the bubble is found to play a crucial role in both the rise velocity and the shape of the bubble. Additionally, if the yield stress effects are increased, the rise velocity is found to exhibit a discontinuous behavior. The mechanism which leads to such phenomena is found to be related with that discussed in Fraggedakis et al. (2016). Ultimately, the existence of the yield surface near the bubble enhances the formation of the negative wake, irrespective of the position of the confinement in relation to the air bubble.

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