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The generation of singular liquid jets in the axisymmetric bubble pinch-off at high Reynolds numbers J.M. GORDILLO, Area de Mecanica de Fluidos, Universidad de Sevilla. ESI, Camino de los descubrimientos, s/n 41092, Spain, A. SEVILLA, J. RODRIGUEZ-RODRIGUEZ, C. MARTINEZ-BAZAN, M. PEREZ-SABORID — In this presentation we review the *symmetric* and *asymmetric* type of bubble pinch-off local geometries described in *PRL*, **95**, 194501, and provide with the different scalings for the minimum radius, R_0, as the singularity is approached. Moreover, in the case of gas inertia is not relevant in the description of the latest stages of bubble breakup (*symmetric pinch-off*), local bubble shape is given by $F(z,t)/R_0(t) = 1 - [1/(6\,log(R_0))]\,(z/R_0)^2$. However, we also discuss that the asymptotic solutions for the *symmetric* case are only reached for times so close to pinch off that they might be difficult to find and, therefore, bubble pinch-off strongly depends on initial conditions. Regarding the *asymmetric* type of breakup, we provide new experimental evidence that support that, close to pinch-off, gas and liquid inertia are balanced. We will show that the velocity of the singular liquid jets formed within air and helium bubbles generated from a needle immersed in a coaxial co-flow strongly depends on gas density. More precisely, the ratio of the liquid jet velocity formed using air (u_a) to the liquid jet velocity formed using helium (u_h) is given, for the same operating conditions, by $u_a/u_h \simeq (\rho_{air}/\rho_{helium})^{1/n}$, with $2 < n < 3$.

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