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Spherical cap bubbles with a bubbly crown C. COSSU, LadHyX, CNRS-Ecole Polytechnique, J.R. LANDEL, Ecole Polytechnique, C.P. CAULFIELD, BP Institute and DAMTP, University of Cambridge — Single large bubbles typically have a spherical cap shape with bubbles of larger volume rising faster than ones of smaller volume. However, except in well-controlled experiments, the released gas splits into a leading cap bubble followed by a crown of satellite bubbles that can contain up to 50% of the total volume of gas. We find that in this case the satellite bubbles rearrange in a characteristic toroidal crown and the leading bubble takes a lenticular shape. The ratio of the torus radii to the leading cap curvature radius and the rise speed of these multipart bubbles are quite constant and predictable in the mean and are furthermore independent of the gas partitioning between the leading and the crown of satellite bubbles. We also show that this multi-part bubble rises slightly faster than a single cap bubble with the same total injected volume of gas.

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