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Satellite Bubble Formation From A Retracting Air Cone[1] FAN YANG, ZIQIANG YANG, YUANSI TIAN, SIGURDUR T. THORODDSEN, King Abdullah Univ of Sci Tech (KAUST) — THE FORMATION OF SMALL DROPLETS OR BUBBLES IS IMPORTANT IN MANY INDUSTRIAL PROCESSES WHERE THEY ARE OFTEN UNDESIRABLE, LIKE WATER-DROPS IN CRUDE OIL OR AIR-BUBBLES IN GLASS-FURNACES. IN OTHER SITUATIONS MICRO-BUBBLES ARE BENEFICIAL, FROM THE AROMA OF CHAMPAGNE TO GAS-TRANSPORT THROUGH THE OCEAN SURFACE. TWO SUCH MECHANISMS ARE PARTIAL COALESCENCE1AND THE COLLAPSE OF IMPACT CRATERS2. PARTIAL COALESCENCE OF DROPS AND BUBBLES APPEAR SIMILAR BUT DIFFER IN FUNDAMENTAL WAYS, WITH MUCH SMALLER SATELLITE BUBBLES THAN DROPLETS. THE PINCH-OFF OF A DIMPLE AT THE BOTTOM OF A REBOUNDING CRATER PORTRAYS PURE INERTIAL DYNAMICS, DIFFERENT FROM THE CAPILLARY-INERTIAL PINCH-OFF OF A DROP2. RECENT WORK BY BRASZ ET AL. (2018)INVESTIGATES THE DROPLET FORMATION FROM THE TIP OF A RETRACTING LIQUID CONE USING A SELF-SIMILAR FORMALISM. MOTIVATED BY THIS STUDY AND THE ABOVE CONSIDERATIONS WE INVESTIGATE HEREIN HOW THE DYNAMICS IS AFFECTED BY SWITCHING THE FLUIDS, LOOKING AT THE RETRACTION OF AN AIR-CONE, OVER A RANGE OF DIFFERENT CONE-ANGLES AND INITIAL PERTURBATION LEVELS, USING THE VOLUME-OF-FLUIDS PROGRAM GERRIS. WE SEE CLEAR DIFFERENCES WITH EARLIER PINCH-OFF OF BUBBLES THAN OBSERVED FOR THE LIQUID CASE3.

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