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Formation of water bells CHRISTOPHE YBERT, CNRS-Universite Lyon 1, CHRISTOPHE CLANET, CNRS - IRPHE, LYDERIC BOCQUET, CNRS-Universite Lyon 1, CYRIL DUEZ, CNRS - Universite Lyon 1 — We study experimentally the situation that consist in a liquid jet impacting normally onto a fixed solid disk. Depending on the experimental conditions, the thin liquid film that spreads onto the solid surface can either pour along the surface, or detach form the disk and form a so-called water bell. The dynamics and the stability of such bells as a function of the hydrodynamic parameters such as the jet and disk diameters or the jet velocity, have already been the object of detailed characterization [1]. This experiment of bell formation appears as the symmetric situation compared to that of a solid body impacting a quiescent liquid. In the latter case, it was recently shown [2] that despite large Re and We numbers, the solid surface characteristics were dramatically influencing the impact scenario. In the present study, we consequently revisit this problem of water bell formation by systematically varying the solid surface characteristics (roughness, surface properties, etc.). It is shown here again that surface parameters strongly influence the domain of bell existence. Our measurements are rationalized by a subtle balance between inertia versus capillary forces and wetting contributions on the liquid film in the ejection region. [1] C. Clanet, *J. Fluid Mech.*, 430, 111-147 (2001) [2] C. Duez *et al.*, *Nature Physics*, 3, 180-183 (2007)

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