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Simulations of walking droplets in a harmonic potential[1] KRISTIN DETTMERS, MIT, DAN HARRIS, UNC, Chapel Hill, ANAND OZA, Courant Institute, NYU, RODOLFO ROSALES, JOHN BUSH, MIT — We present the results of a theoretical investigation of the dynamics of droplets walking on the surface of a vibrating bath while subjected to a radial spring force. This system was first explored by Perrard et al. (2014) and Labousse et al. (in preparation), who reported a number of orbital states characterized by a double quantization, in mean radius and angular momentum. Particular attention is given here to characterizing the dependence of the system behavior, specifically the quantization, on the vibrational forcing and the spring force. A number of new exotic orbital states are identified.

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