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Heewon Kim* (khw9421@naver.com), Department of mathematics, Science complex A-dong #320, Ewha womans university, Seoul, Seoul 03760, South Korea, **Jiwon Seo** (ijaydoubleu@gmail.com), Department of mathematics, Science complex A-dong #320, Ewha womans university, Seoul, Seoul 03760, South Korea, **Bora Jeong** (nddrgo@naver.com), Department of mathematics, Science complex A-dong #320, Ewha womans university, Seoul, Seoul 03760, South Korea, and **Chohong Min**. *An Experiment of the Malkus-Lorenz Waterwheel and Its Measurement by Image Processing.*

We introduce a simple and efficient experiment setup for the Malkus-Lorenz waterwheel. Through a series of image processing techniques, our work is listed as one of the few experiments that measure not only the angular velocity but also the mass distribution. Our experiment is to observe qualitative changes on the waterwheel as the leakage rate changes, while the other physical parameters are fixed. We perform a bifurcation analysis for the qualitative changes, and the phase portraits from experiments are validated by the bifurcation analysis. (Received June 24, 2016)