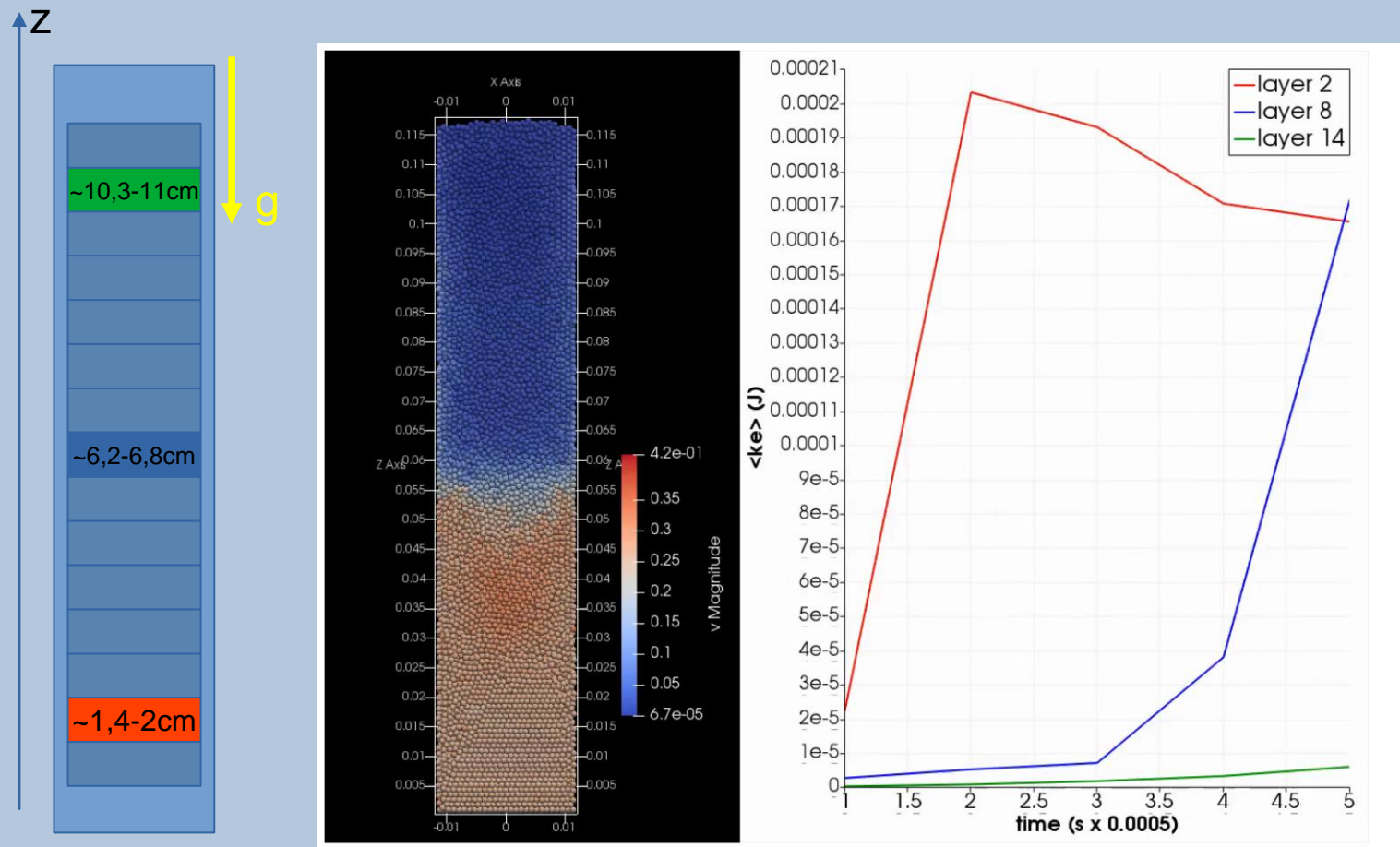
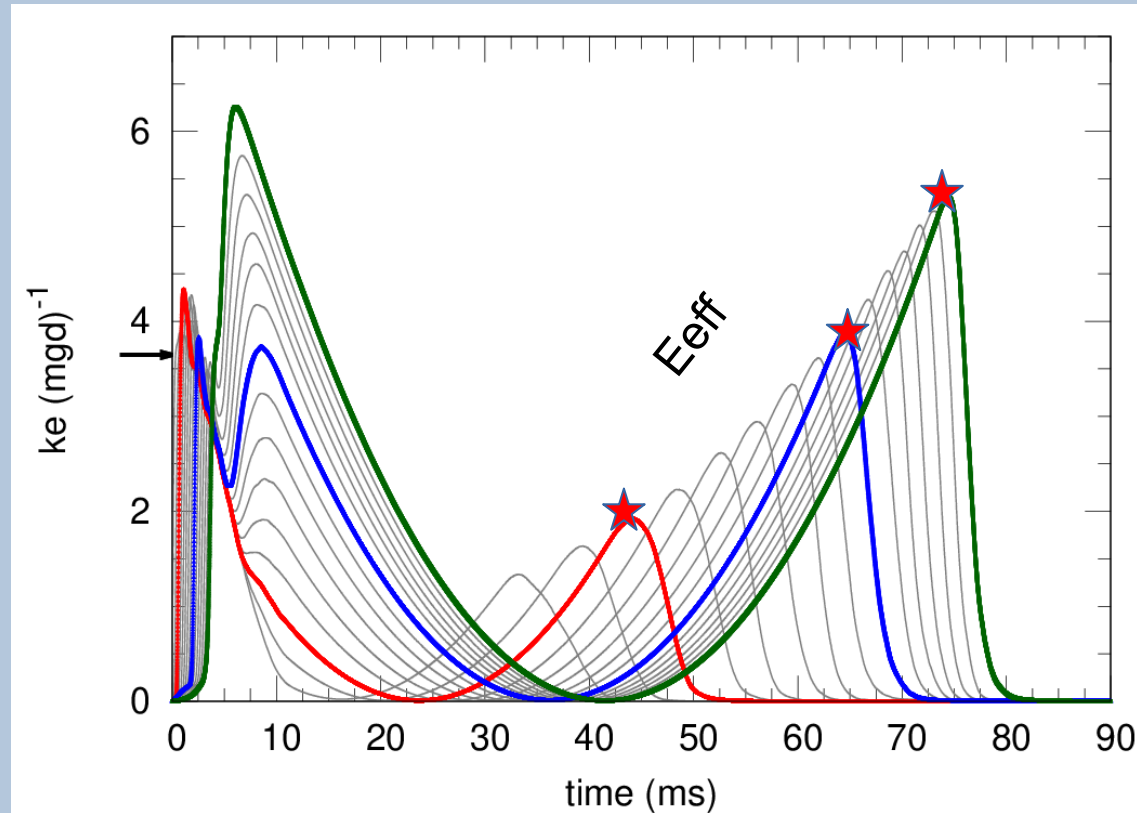
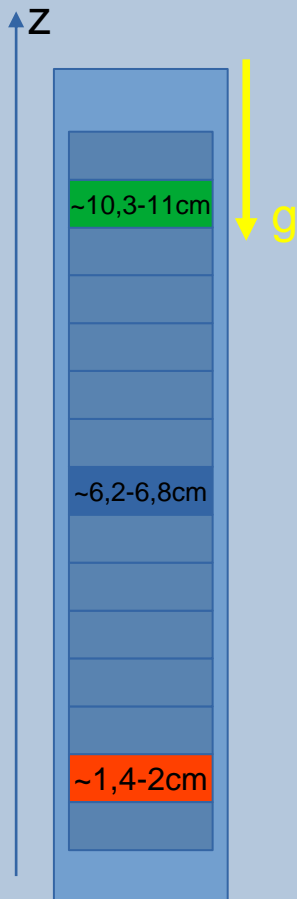


Density Instabilities and Compaction Efficiency in a tapped granular pile.

Paula A. Gago

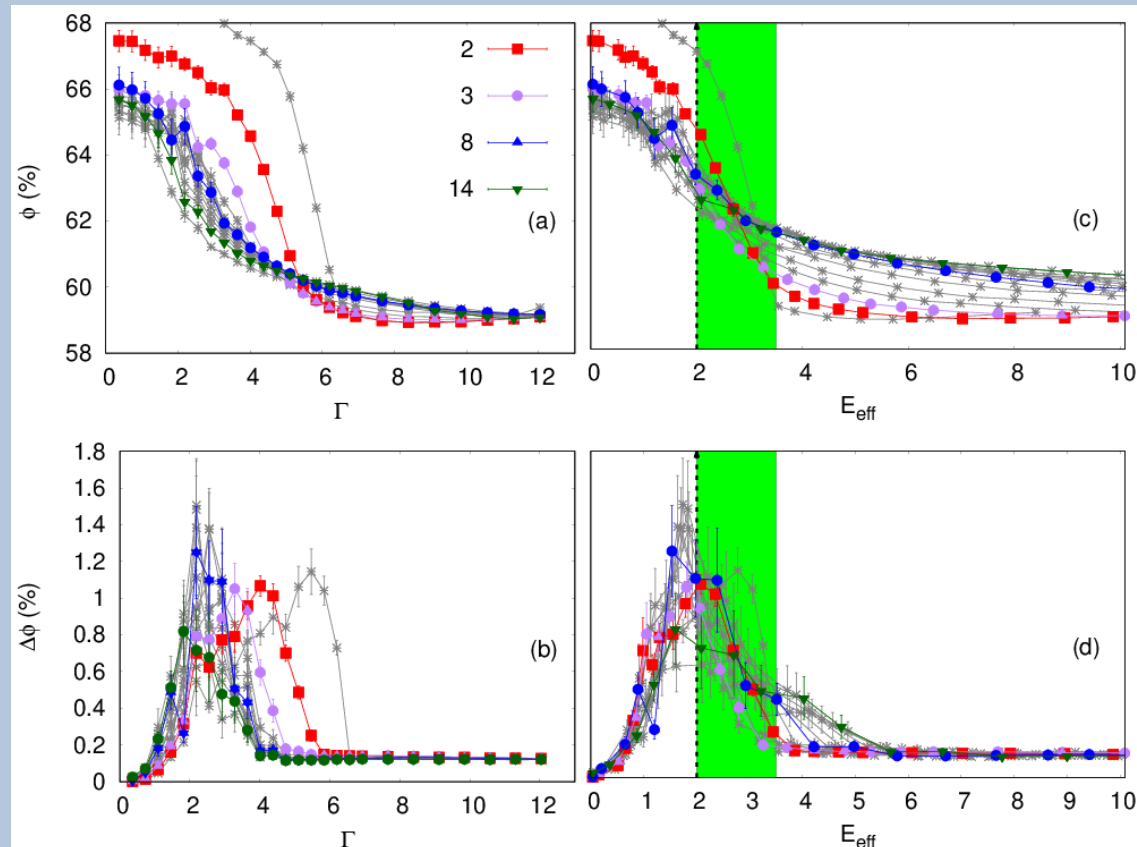
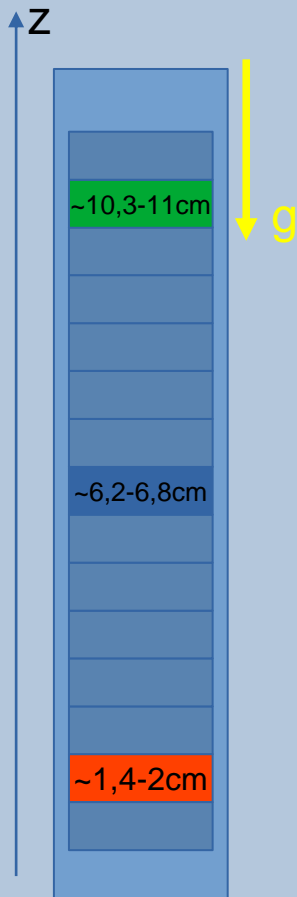


Effective energy



- Gago, P.A. and Boettcher S., *PNAS*, 117.52 (2020): 33072-33076.
- Gago, P.A. and Boettcher S., *Sci. Adv.* 8.2 (2022): eabl6304.

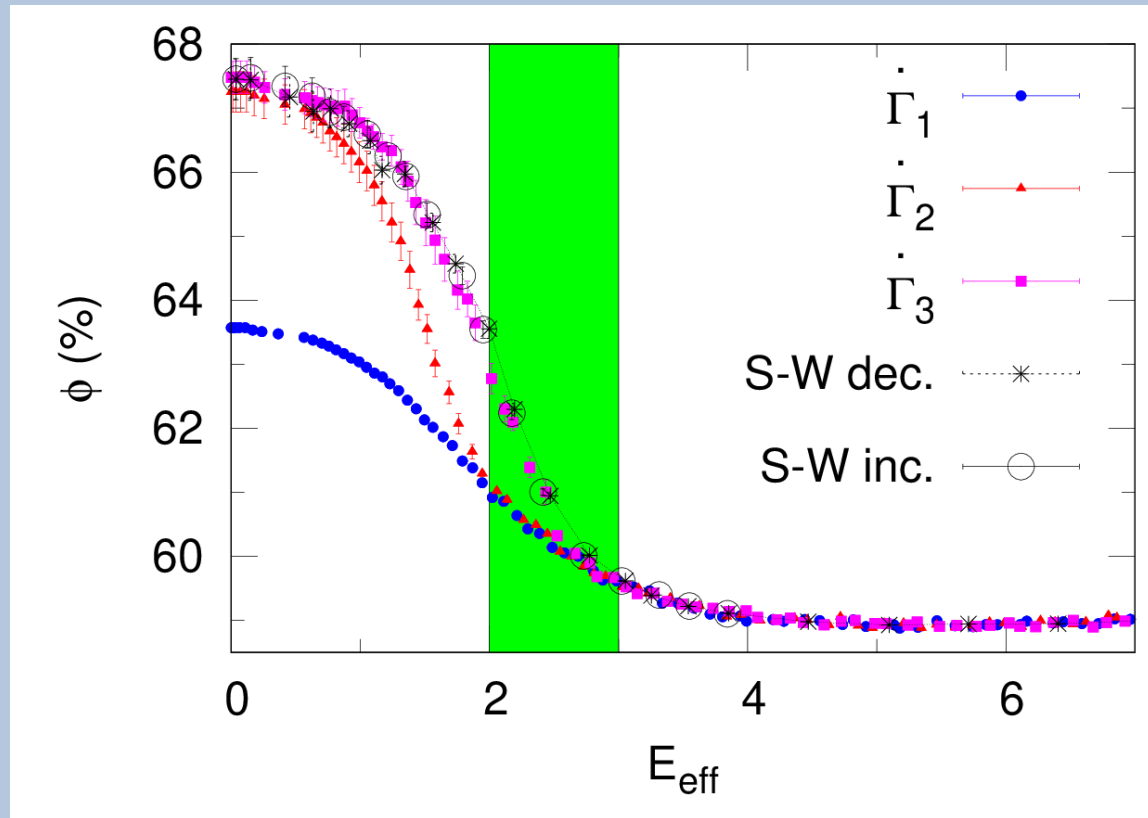
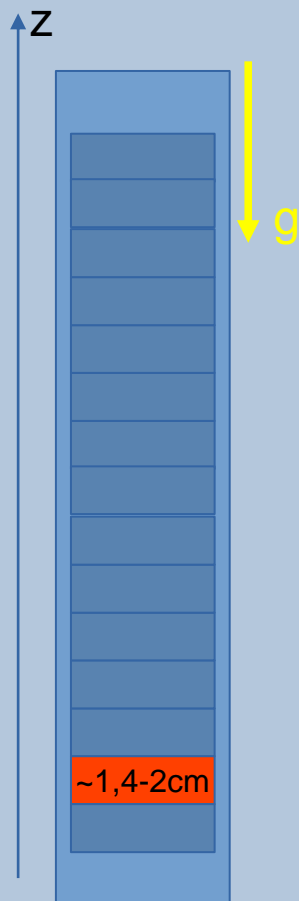
Effective energy



- Gago, P.A. and Boettcher S., *PNAS*, 117.52 (2020): 33072-33076.
- Gago, P.A. and Boettcher S., *Sci. Adv.* 8.2 (2022): eabl6304.

Glass transition

Continuum annealing



$$\dot{\Gamma}_1 \sim -0.036 \text{ tap}^{-1} \quad (350 \text{ taps})$$

$$\dot{\Gamma}_2 = \dot{\Gamma}_1/4 \quad (1400 \text{ taps})$$

$$\dot{\Gamma}_3 = \dot{\Gamma}_1/8 \quad (2800 \text{ taps})$$

- Gago, P.A. and Boettcher S., *PNAS*, 117.52 (2020): 33072-33076.
- Gago, P.A. and Boettcher S., *Sci. Adv.* 8.2 (2022): eabl6304.