# D-cone : influence of gravity and dynamics

Berenice Nouvel[1], Gwenn Boedec*†[1], and Julien Deschamps*‡[1]

[1]Institut de Recherche sur les Phénomènes Hors Equilibre – Aix Marseille Université, Ecole Centrale de Marseille, Centre National de la Recherche Scientifique, Aix Marseille Université : UMR7342 / UMR6594 / UMR138, Centre National de la Recherche Scientifique : UMR7342 / UMR6594 / UMR138 – France

**Abstract**

When a thin elastic disk is pushed into a hollow cylinder by an indenter, the so-called d-cone (1) is observed. It has been shown that close to threshold, the d-cone solution co-exist with regular buckling of the disk (2). Using a similar experimental set-up, we extend this static study to take into account the influence of gravity on the state diagram of the system, and show that new branches of solution appears. We also look at the dynamics of (dis)appearance of the d-cone from the buckling branch.

(1) Cerda, E., Mahadevan, L., "Conical Surfaces and Crescent Singularities in Crumpled Sheets",
Physical review letter, 80, 2358-2361 , (1998)

(2) Suzanne, Tristan, et al. "Indentation of an elastic disk on a circular supporting ring." *Physical Review E* 106.6 (2022): 065002.

*Speaker
†Corresponding author: gwenn.boedec@univ-amu.fr
‡Corresponding author: julien.deschamps@univ-amu.fr