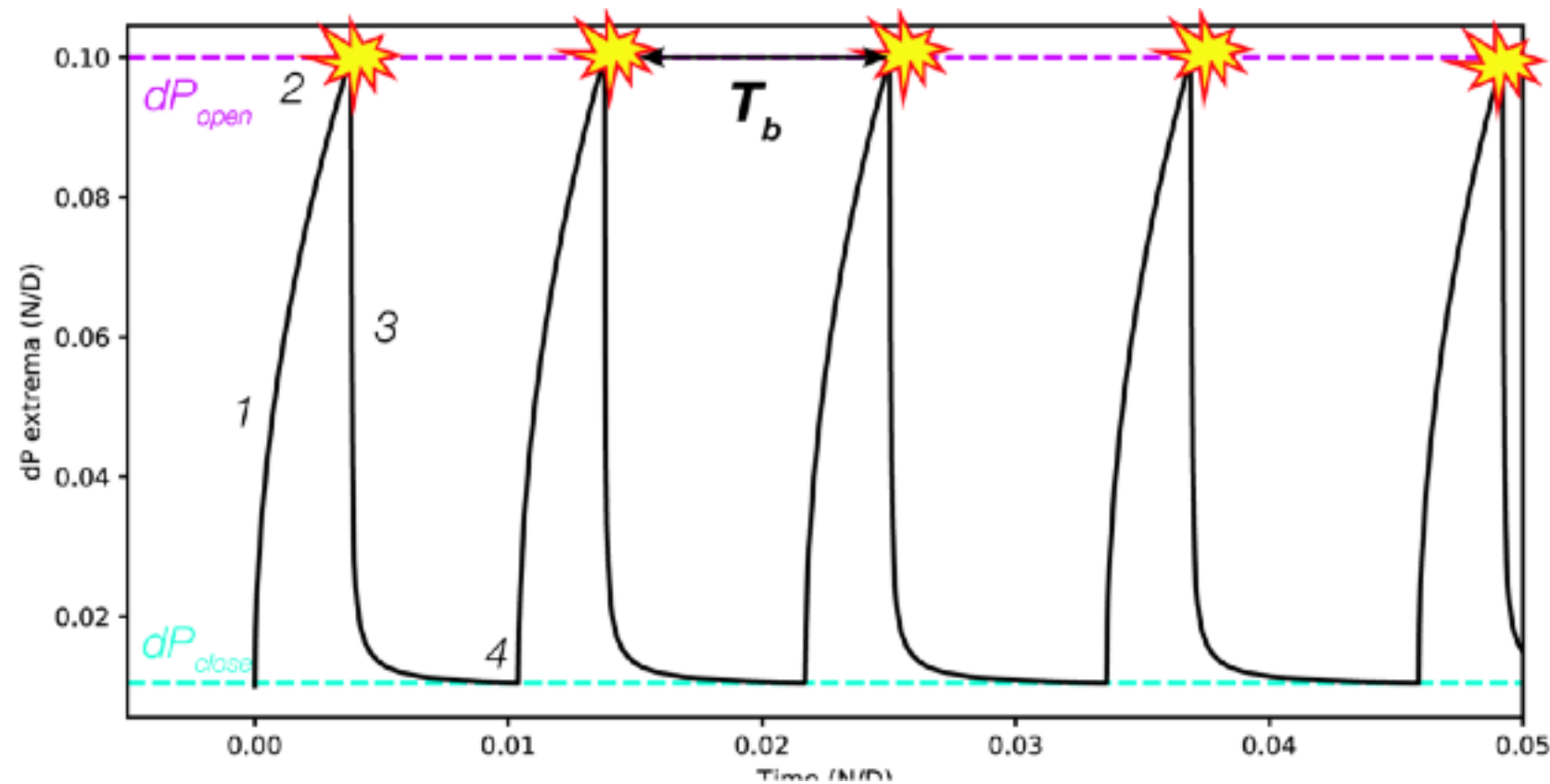


Dynamics of an isolated valve

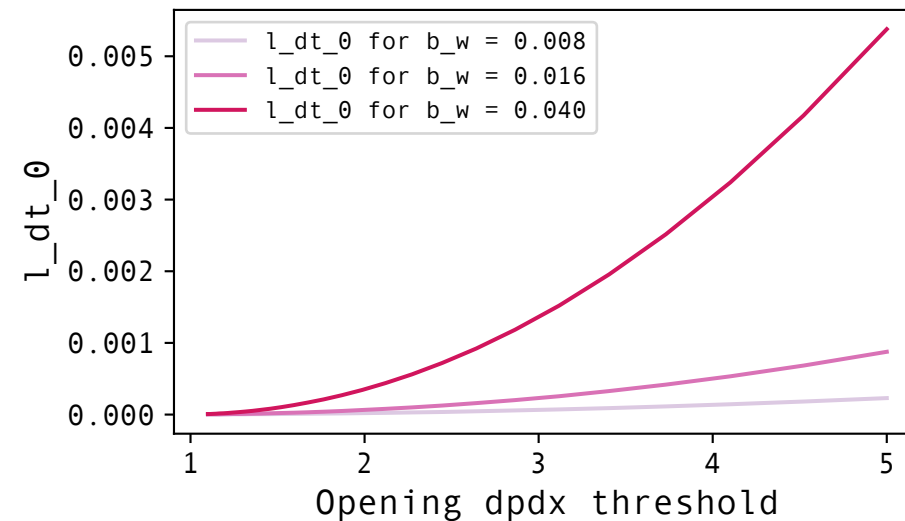
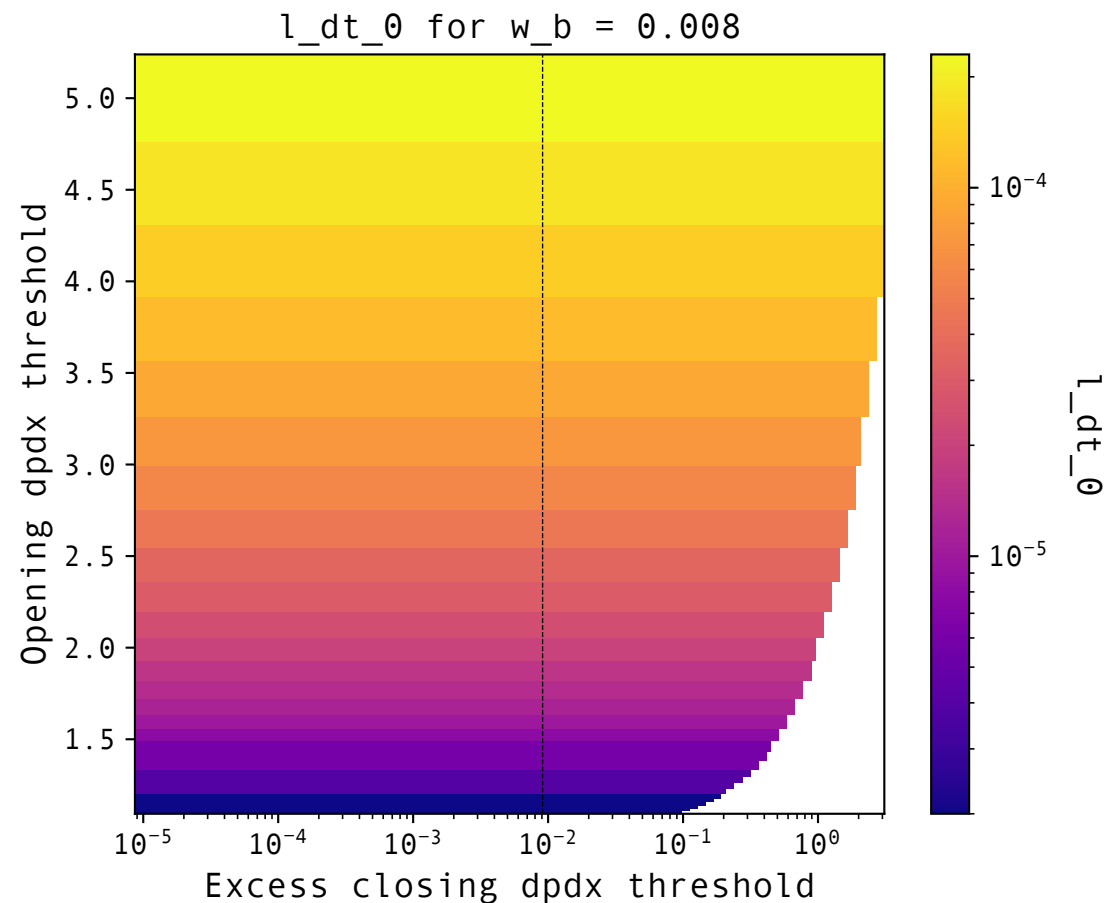
(a) *Experimental setup*



In order to understand the valve dynamics, cycle characteristic times are measured (loading and unloading periods) for a set of opening/closing thresholds and widths.

Each run lasts $2 \cdot T_{scale}$, during which we measure the **first loading** (resp. unloading) **dt**, the **last loading** (resp. unloading) **dt**, and the time at which the measure is stabilized.

(b) Results: *first loading period* (l_dt_0)



Observations:

- 1/** No dependency on closing threshold (obviously)
- 2/** The higher the opening threshold, the longer the loading dt. $l_dt_0 = f(dpdx_op)$ convex curve: the pressure rises quickly first and then slower and slower (cf dP curve in previous slide)
- 3/** The wider the barrier, the longer the loading (the overpressure needed to reach the threshold pressure gradient grows with distance from the center of the barrier)