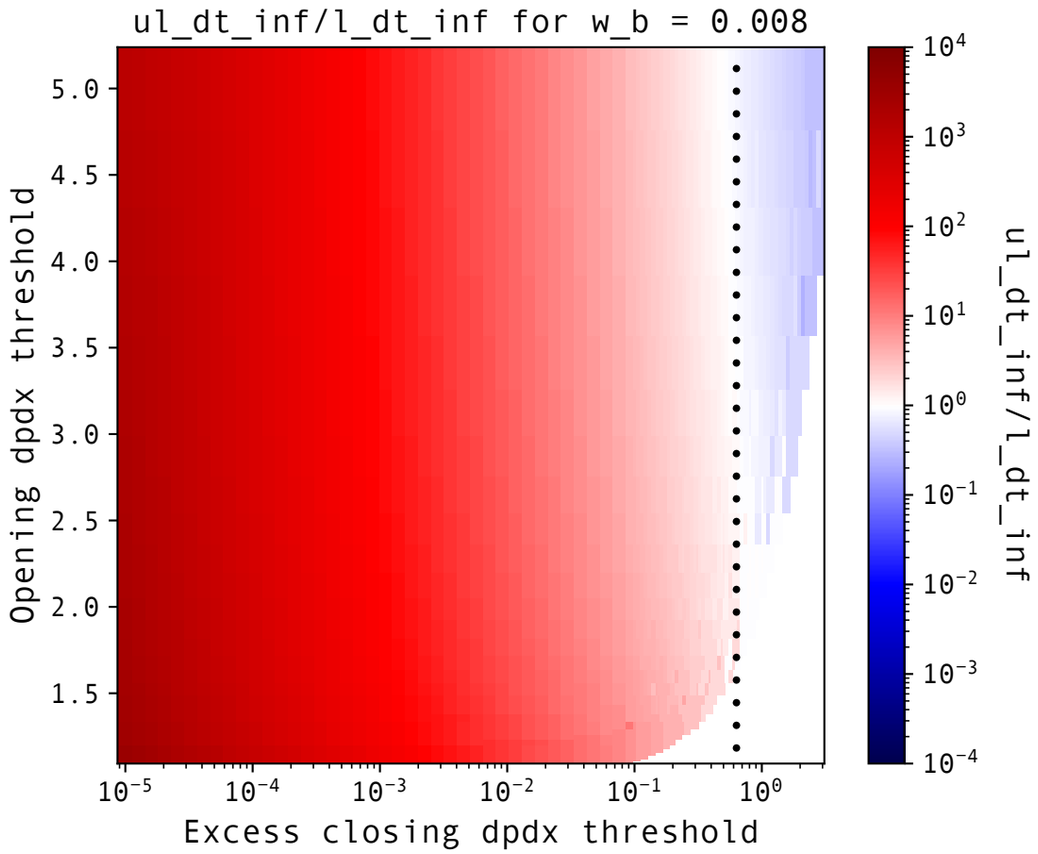
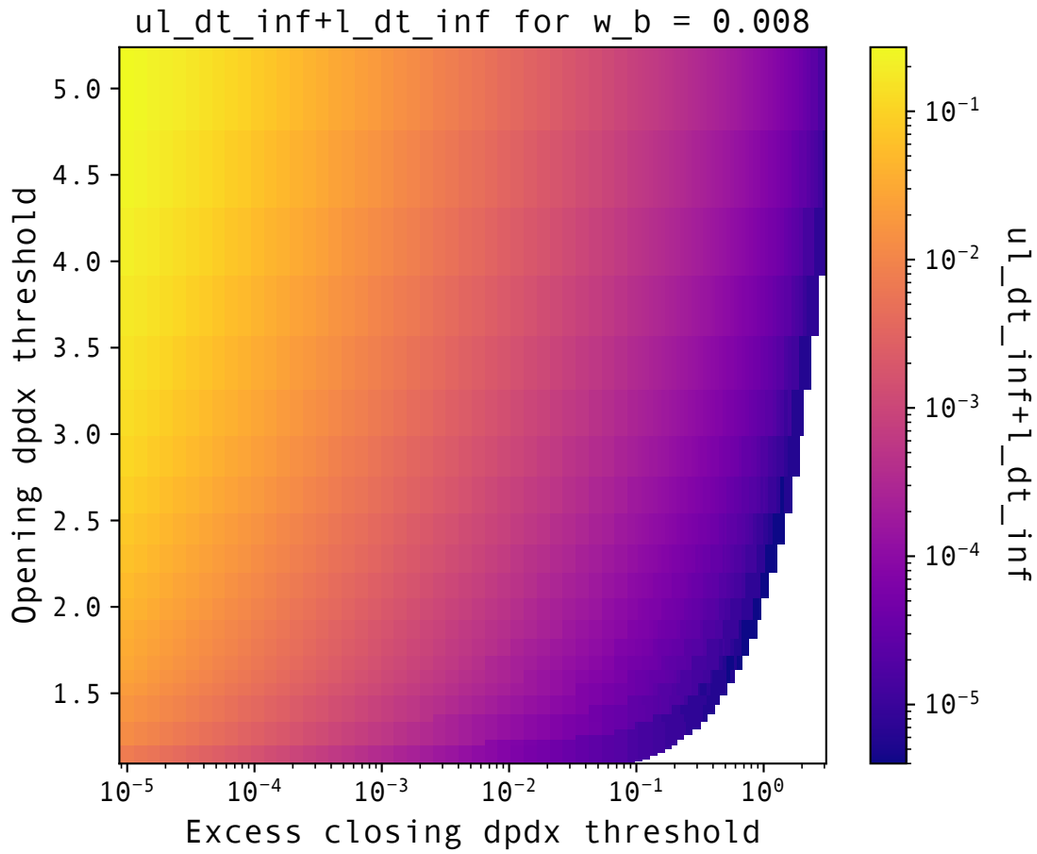
Dynamics of an isolated valve

Q_bound

(b) Results: cycle length and un-/loading predominance





Observations:

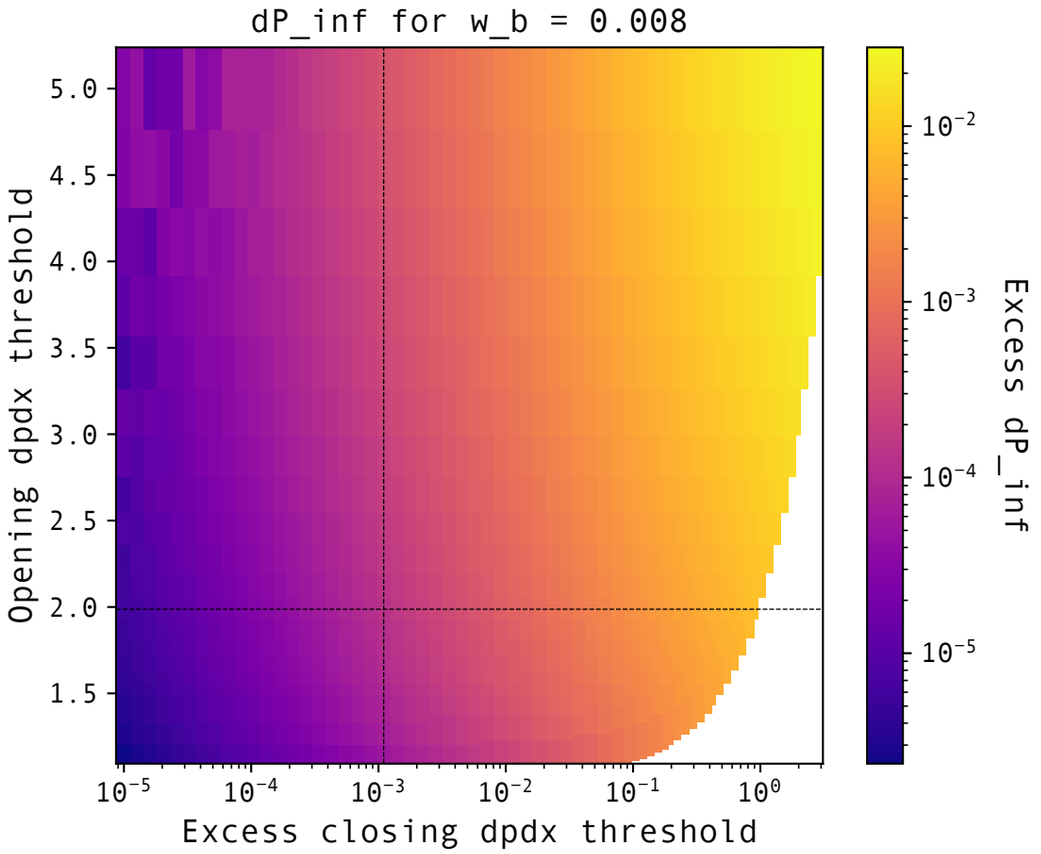
1/ In the range of parameters investigated, closing threshold is the main control on cycle length

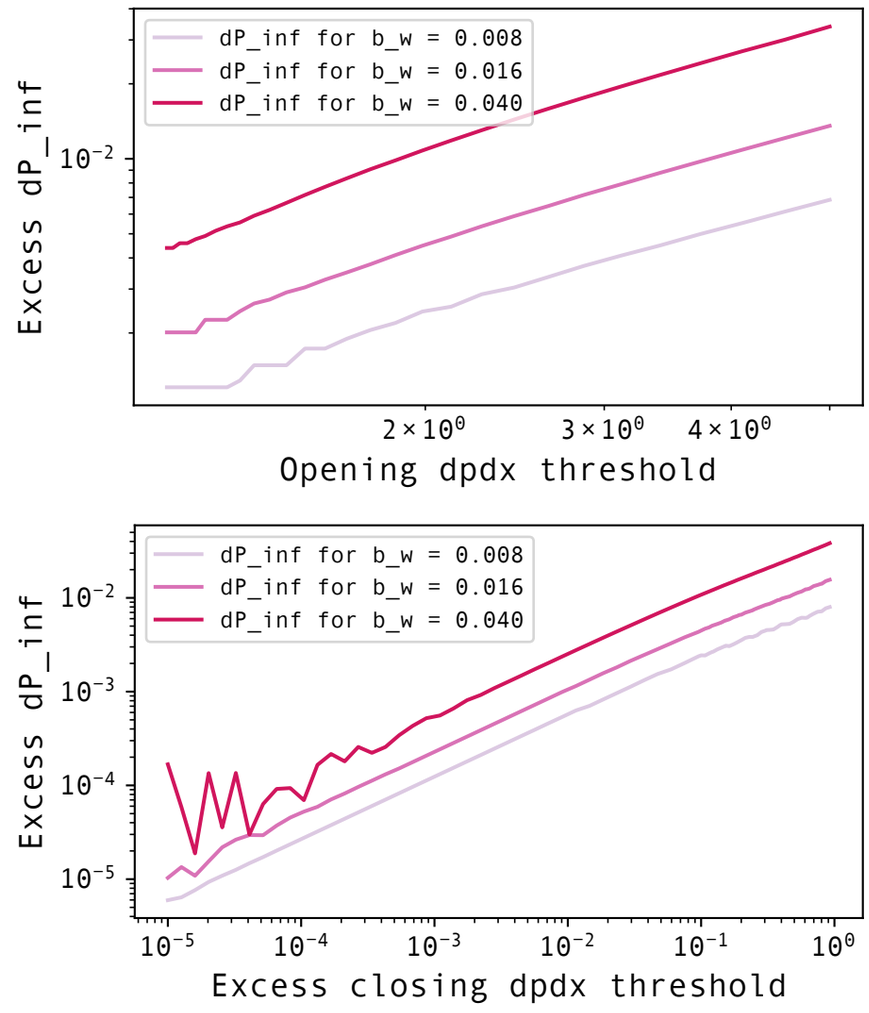
2/ As a rule of thumb, the valve can be considered to be mostly opened when the closing threshold is lower than 1.6, and mostly closed above.

Dynamics of an isolated valve

Q_bound

(b) Results: pressure diff. across the domain (dP_inf)





Observations:

1/ dP_inf grows with both closing and opening threshold: the more closed the valve is, the more it appears as a barrier of high permeability, thus letting the pressure increase on the sides of the domain.

2/ The dependency on w_b seems to be more linear this time, but still, the wider the barrier, the less permeable it appears.