Overview

1 Done so far

- Circular membranes coupled through an air-cavity of arbitrary shape (quasi-static process assumption).
- Circular membranes coupled through cylindrical air cavity assuming linear acoustics inside cavity. Reduces to the previous system when $\lambda \gg L$.
- Membrane with infinite mass extra-columella coupled through an air-cavity of arbitrary shape. Non-symmetric shapes already appear in this case.

Note: Steady state solution for the three above cases.

2 To be done

- Transient response, i.e., membrane profile at $t = 0^+$. Needed to justify that the steady state solution is enough. This requires estimate of α - damping coefficient.
- Membrane with finite mass extra-columella. I've written down a solution to the analogous problem in 1D - a string clamped at one end and attached to a finite mass (can be an extended object) at the other.