

# Movie caption list for “Spanwise variations in membrane flutter dynamics”

Christiana Mavroyiakoumou and Silas Alben

In all the movies the dimensionless stretching rigidity  $R_3 = 1$ .

## MEMBRANES WITH ASPECT RATIO ONE

Within each movie, three panels are shown. The left panel shows the full 3-D membrane motion with the purple arrows indicating the far-field flow direction. The top right panel shows the  $z$ -deflection of the membrane center versus time and the moving red dot marks its value at the current time in the movie. The bottom right panel shows the membrane motion looking down from larger  $z$  values (top view).

| Movie name   | Boundary conditions | Initial condition | Mass, $R_1$ | Pretension, $T_0$ | Poisson ratio, $\nu$ |
|--------------|---------------------|-------------------|-------------|-------------------|----------------------|
| Fig2a...mp4  | FFFF                | asymm.            | $10^{-0.5}$ | $10^{-0.25}$      | 0                    |
| Fig2b...mp4  | FFFF                | symm.             | $10^{-0.5}$ | $10^{-0.25}$      | 0                    |
| Fig3a...mp4  | FRFR                | asymm.            | $10^{-2}$   | $10^{0.5}$        | 0                    |
| Fig3b...mp4  | FRFR                | symm.             | $10^{-2}$   | $10^{0.5}$        | 0                    |
| Fig4b...mp4  | FRFR                | symm.             | $10^{-2}$   | $10^{-0.25}$      | 0.5                  |
| Fig4f...mp4  | FRFR                | symm.             | $10^{-1}$   | $10^{-0.5}$       | 0.5                  |
| Fig5a...mp4  | FFFF                | asymm.            | $10^{-1}$   | $10^{-0.25}$      | 0                    |
| Fig7a...mp4  | FFFF                | asymm.            | $10^{-1}$   | $10^{-0.1}$       | 0                    |
| Fig7b...mp4  | FFFF                | asymm.            | $10^0$      | $10^{-0.1}$       | 0                    |
| Fig7c...mp4  | FFFF                | asymm.            | $10^1$      | $10^{-0.1}$       | 0                    |
| Fig7d...mp4  | FFFF                | asymm.            | $10^{-0.5}$ | $10^{-0.25}$      | 0                    |
| Fig7e...mp4  | FFFF                | asymm.            | $10^0$      | $10^{-0.25}$      | 0                    |
| Fig7f...mp4  | FFFF                | asymm.            | $10^{0.5}$  | $10^{-0.25}$      | 0                    |
| Fig9a...mp4  | FFFF                | asymm.            | $10^0$      | $10^{-0.25}$      | 0.5                  |
| Fig9b...mp4  | FFFF                | asymm.            | $10^{0.5}$  | $10^{-0.25}$      | 0.5                  |
| Fig9c...mp4  | FFFF                | asymm.            | $10^1$      | $10^{-0.25}$      | 0.5                  |
| Fig9d...mp4  | FFFF                | asymm.            | $10^0$      | $10^{-0.5}$       | 0.5                  |
| Fig9e...mp4  | FFFF                | asymm.            | $10^{0.5}$  | $10^{-0.5}$       | 0.5                  |
| Fig9f...mp4  | FFFF                | asymm.            | $10^1$      | $10^{-0.5}$       | 0.5                  |
| Fig11a...mp4 | FRFR                | asymm.            | $10^{-1.5}$ | $10^{0.5}$        | 0                    |
| Fig11b...mp4 | FRFR                | asymm.            | $10^0$      | $10^{0.5}$        | 0                    |
| Fig11c...mp4 | FRFR                | asymm.            | $10^{1.5}$  | $10^{0.5}$        | 0                    |
| Fig13a...mp4 | FRFR                | asymm.            | $10^{-1.5}$ | $10^{-0.25}$      | 0.5                  |
| Fig13b...mp4 | FRFR                | asymm.            | $10^0$      | $10^{-0.25}$      | 0.5                  |
| Fig13c...mp4 | FRFR                | asymm.            | $10^{1.5}$  | $10^{-0.25}$      | 0.5                  |

Within each movie, three panels are shown. The top left panel shows the full 3-D membrane motion with the purple arrows indicating the far-field flow direction. The right panel shows the membrane motion looking down from larger  $z$  values (top view). The bottom left panel shows the  $z$ -deflection of the membrane center versus time and the moving red dot marks its value at each time shown.

| Movie name   | Boundary conditions | Initial condition | Mass, $R_1$ | Pretension, $T_0$ | Poisson ratio, $\nu$ |
|--------------|---------------------|-------------------|-------------|-------------------|----------------------|
| Fig14c...mp4 | FFFF                | asymm.            | $10^0$      | $10^{-0.1}$       | 0                    |
| Fig14d...mp4 | FFFF                | asymm.            | $10^{0.5}$  | $10^{-0.1}$       | 0                    |
| Fig14e...mp4 | FFFF                | asymm.            | $10^1$      | $10^{-0.1}$       | 0                    |
| Fig14f...mp4 | FFFF                | asymm.            | $10^0$      | $10^{-0.25}$      | 0                    |
| Fig14g...mp4 | FFFF                | asymm.            | $10^{0.5}$  | $10^{-0.25}$      | 0                    |
| Fig15c...mp4 | FRFR                | asymm.            | $10^{-0.5}$ | $10^{0.5}$        | 0                    |
| Fig15d...mp4 | FRFR                | asymm.            | $10^0$      | $10^{0.5}$        | 0                    |
| Fig15e...mp4 | FRFR                | asymm.            | $10^{0.5}$  | $10^{0.5}$        | 0                    |
| Fig15f...mp4 | FRFR                | asymm.            | $10^1$      | $10^{0.5}$        | 0                    |
| Fig15g...mp4 | FRFR                | asymm.            | $10^{1.5}$  | $10^{0.5}$        | 0                    |
| Fig16c...mp4 | FRFR                | asymm.            | $10^0$      | $10^{-0.1}$       | 0.5                  |
| Fig16d...mp4 | FRFR                | asymm.            | $10^{0.5}$  | $10^{-0.1}$       | 0.5                  |
| Fig16e...mp4 | FRFR                | asymm.            | $10^1$      | $10^{-0.1}$       | 0.5                  |
| Fig16f...mp4 | FRFR                | asymm.            | $10^0$      | $10^{-0.25}$      | 0.5                  |
| Fig16g...mp4 | FRFR                | asymm.            | $10^{0.5}$  | $10^{-0.25}$      | 0.5                  |