Movie 1

Meridional (left) and $x = 1$ (right) slice plane visualisations of a single period of the $|m| = 1$ limit cycle oscillation at $(Re, S) = (150, 2.000)$ via instantaneous axial velocity contours and in-plane streamlines extracted from the volume $(x, r, \theta) \in [-1, 5] \times [0, 3] \times [0, 2\pi]$. Dotted lines show the planes' intersection and the dashed circle in the axial slice plane indicates the location of the pipe wall.

Movie 2

Meridional (left) and $x = 1$ (right) slice plane visualisations of a single period of the $|m| = 2$ limit cycle oscillation at $(Re, S >) = (150, 2.000)$ via instantaneous axial velocity contours and in-plane streamlines extracted from the volume $(x, r, \theta) \in [-1, 5] \times [0, 3] \times [0, 2\pi]$. Dotted lines show the planes' intersection and the dashed circle in the axial slice plane indicates the location of the pipe wall.

Movie 3

Meridional (left) and $x = 1$ (right) slice plane visualisations of a single period of the $m = 0$ limit cycle oscillation at $(Re, S) = (300, 1.987)$ via instantaneous axial velocity contours and in-plane streamlines extracted from the volume $(x, r, \theta) \in [-1, 5] \times [0, 3] \times [0, 2\pi]$. Dotted lines show the planes' intersection and the dashed circle in the axial slice plane indicates the location of the pipe wall.

Movie 4

Meridional (left) and $x = 1$ (right) slice plane visualisations of a single period of the $|m| = 3$ limit cycle oscillation at $(Re, S) = (300, 1.367)$ via instantaneous axial velocity contours and in-plane streamlines extracted from the volume $(x, r, \theta) \in [-1, 5] \times [0, 3] \times [0, 2\pi]$. Dotted lines show the planes' intersection and the dashed circle in the axial slice plane indicates the location of the pipe wall.

Movie 5

Meridional (left) and $x = 2$ (right) slice plane visualisations of a single period of an $|m| = 2$ limit cycle oscillation at $(Re, S) = (200, 2.000)$ via instantaneous axial velocity contours and in-plane streamlines extracted from the volume $(x, r, \theta) \in [-2, 10] \times [0, 6] \times [0, 2\pi]$. Dotted lines show the planes' intersection and the dashed circle in the axial slice plane indicates the location of the pipe wall.

Movie 6

Meridional (left) and $x = 2$ (right) slice plane visualisations of a single period of an $|m| = 1$ limit cycle oscillation at $(Re, S) = (200, 2.050)$ via instantaneous axial velocity contours and in-plane streamlines extracted from the volume $(x, r, \theta) \in [-2, 10] \times [0, 6] \times [0, 2\pi]$. Dotted lines show the planes' intersection and the dashed circle in the axial slice plane indicates the location of the pipe wall.

Movie 7

Meridional (left) and $x = 2$ (right) slice plane visualisations of a single period of an $|m| = 2$ limit cycle oscillation at $(Re, S) = (200, 2.075)$ via instantaneous axial velocity contours and in-plane streamlines extracted from the volume $(x, r, \theta) \in [-2, 10] \times [0, 6] \times [0, 2\pi]$. Dotted lines show the planes' intersection and the dashed circle in the axial slice plane indicates the location of the pipe wall.

Movie 8

Meridional (left) and $x = 2$ (right) slice plane visualisations of a single period of an $|m| = 2$ limit cycle oscillation at $(Re, S) = (200, 2.073)$ via instantaneous axial velocity contours and in-plane streamlines extracted from the volume $(x, r, \theta) \in [-2, 10] \times [0, 6] \times [0, 2\pi]$. Dotted lines show the planes' intersection and the dashed circle in the axial slice plane indicates the location of the pipe wall.

Movie 9

Meridional (left) and $x = 4$ (right) slice plane visualisations of a single period of an $|m| = 2$ limit cycle oscillation at $(Re, S) = (200, 2.036)$ via instantaneous axial velocity contours and in-plane streamlines extracted from the volume $(x, r, \theta) \in [-4, 20] \times [0, 12] \times [0, 2\pi]$. Dotted lines show the planes' intersection and the dashed circle in the axial slice plane indicates the location of the pipe wall.

1. *Movie 10

Meridional (left) and $x = 0.5$ (right) slice plane visualisations of a single period of the $|m| = 1$ limit cycle oscillation at $(Re, S) = (300, 2.766)$ via instantaneous axial velocity contours and in-plane streamlines extracted from the volume $(x, r, \theta) \in [-1, 5] \times [0, 3] \times [0, 2\pi]$. Dotted lines show the planes' intersection and the dashed circle in the axial slice plane indicates the location of the pipe wall.