

Supplementary Material

Curvature instability of a curved Batchelor vortex

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The supplementary material consists of 6 folders, each containing 15 files of data in ascii format. The name of the folder gives the value of the parameter W_0 (W01 for $W_0 = 0.1$), while the name of the file corresponds to the coefficient which is provided (ImagQB for $\text{Im}(Q_B)$, VA for V_A). Each file contains a 7×7 matrix, except in the folder W0 (that is for $W_0 = 0$), where they contain 9×7 matrices. The line m and column n of each matrix gives the value of the data for the resonant mode of label $[m, n]$, that is corresponding to the resonance of the m th branch of the Kelvin mode $m_A = 0$ with the n th branch of the Kelvin mode $m_B = 1$. For example, the real part of Q_B for the mode $[4, 2]$ at $W_0 = 0.3$ corresponds to the value found in the 4th line and second column of the matrix in the file RealQB of the folder W03 (which reads 3.1496495e-01). Each matrix contains several “NaN” values which indicate that the corresponding resonant modes do not exist, because either the critical layer damping is too important or the branches do not cross.

The growth rate plots shown in figures 5 and 7, as well as the stability diagram obtained in figures 6 and 8 have been obtained using the data provided in the folders W0, W02 and W04 for $W_0 = 0, 0.2, 0.4$. Similar plots can be obtained for the values of $W_0 = 0.1, 0.3, 0.5$ using the data in the other folders.

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