Supplementary Material for "Stability analysis of a particle band on the fluid fluid interface"

Full Expression for Growth Matrix

The expressions for each component of the 2×2 growth matrix, $G_{jk,n}$, in Eq. (3.11) of the manuscript are as follows:

$$G_{11} = \frac{6\beta Q \left(\mu_1 - \mu_2\right)\left(E_{22}\overline{R}_1^{n-2} - E_{21}\overline{R}_1^{-(n+2)}\right)}{\pi b^3 \left(E_{11}E_{22} - E_{12}E_{21}\right)} - \frac{Q}{2\pi b \overline{R}_1^2}\left(1 + \frac{\phi_2 - \phi_0}{\phi_2 - \frac{\phi_0}{\beta}}\right), \tag{S1a}$$

$$G_{12} = \frac{\beta\left(E_{11}\overline{R}_1^{-(n+1)} - E_{12}\overline{R}_1^{n-1}\right)}{E_{11}E_{22} - E_{12}E_{21}}\left[\frac{\gamma\left(n-1\right)}{\overline{R}_2^2} - \frac{6\mu_2 Q}{\pi b^3 \overline{R}_2}\right], \tag{S1b}$$

$$G_{21} = \frac{6Q\left(\mu_1 - \mu_2\right)\left(E_{22}\overline{R}_2^{n-1} - E_{21}\overline{R}_2^{-(n+1)}\right)}{\pi b^3 \overline{R}_1\left(E_{11}E_{22} - E_{12}E_{21}\right)}, \tag{S1c}$$

$$G_{22} = \frac{\left(E_{11}\overline{R}_2^{-(n+1)} - E_{12}\overline{R}_2^{n-1}\right)}{E_{11}E_{22} - E_{12}E_{21}}\left[\frac{\gamma\left(n-1\right)}{\overline{R}_2^2} - \frac{6\mu_2 Q}{\pi b^3 \overline{R}_2}\right] - \frac{Q}{2\pi b \overline{R}_2^2}, \tag{S1d}$$

where

$$E_{11} = 12\left(\frac{\mu_1 - \mu_2}{b^2 n}\right)\overline{R}_1^n + 2\left(\mu_2 - \mu_1\right)\left(n-1\right)\overline{R}_1^{n-2}, \tag{S1e}$$

$$E_{12} = 12\left(\frac{\mu_1 + \mu_2}{b^2 n}\right)\overline{R}_1^{-n} - 2\left(\mu_1 + \mu_2\right)\left(n+1\right)\overline{R}_1^{-(n+2)}, \tag{S1f}$$

$$E_{21} = \left(\frac{-12\mu_2}{b^2 n}\right)\overline{R}_2^n + 2\mu_2\left(n-1\right)\overline{R}_2^{n-2}, \tag{S1g}$$

$$E_{22} = \left(\frac{12\mu_2}{b^2 n} \right) \overline{R}_2^{-n} - 2\mu_2 \left(n + 1 \right) \overline{R}_2^{-(n+2)}. \tag{S1h}$$