Stability Analysis: Giesekus

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1 Equation Coefficients

1.1 A_{11} Equation

A_{11} $\omega =$

v_1	$-A_{11,x_{10}} + 2A_{11_0}ik_1 + 2A_{12_0}ik_2 + \frac{k_1}{k_2}A_{11,x_{20}}$
A_{11}	$-(v_{1_0}ik_1 + v_{2_0}ik_2) + 2v_{1,x_{10}} - 1 - \alpha(2A_{11_0} - 2)$
A_{12}	$2v_{1,x_{20}} - \alpha(2A_{12_0})$
A_{22}	0

1.2 A_{12} Equation

A_{12} $\omega =$

v_1	$-A_{12,x_{10}} + A_{12_0}ik_1 + A_{22_0}ik_2 + \frac{k_1}{k_2}[A_{12,x_{20}} - A_{11_0}ik_1 - A_{12_0}ik_2]$
A_{11}	$v_{2,x_{10}} - \alpha(A_{12_0})$
A_{12}	$-(v_{1_0}ik_1 + v_{2_0}ik_2) + v_{1,x_{10}} + v_{2,x_{20}} - 1 - \alpha(A_{11_0} + A_{22_0} - 2)$
A_{22}	$v_{1,x_{20}} - \alpha(A_{12_0})$

1.3 A_{22} Equation

A_{22} $\omega =$

v_1	$-A_{22,x_{10}} + \frac{k_1}{k_2}[A_{22,x_{20}} - 2A_{12_0}ik_1 - 2A_{22_0}ik_2]$
A_{11}	0
A_{12}	$2v_{2,x_{10}} - \alpha(2A_{12_0})$
A_{22}	$-(v_{1_0}ik_1 + v_{2_0}ik_2) + 2v_{2,x_{20}} - 1 - \alpha(2A_{22_0} - 2)$

1.4 Reduced Momentum Equation

$El^{-1}\omega(k_2 + \frac{k_1^2}{k_2})v_1 =$

v_1	$El^{-1}[k_1 v_{1,x_{20}} - k_2(v_{1,x_{10}} + v_{1_0}ik_1 + v_{2_0}ik_2) + k_1 v_{2,x_{10}} - \frac{k_1^2}{k_2}(v_{2,x_{20}} + v_{1_0}ik_1 + v_{2_0}ik_2)] - (k_2 + \frac{k_1^2}{k_2})\beta(k_1^2 + k_2^2)$
A_{11}	ik_1k_2
A_{12}	$ik_2^2 - ik_1^2$
A_{22}	$-ik_1k_2$

2 Repeated Terms/Phrases

2.1 Most Helpful

$A_{11_0}ik_1 + A_{12_0}ik_2$

$A_{12_0}ik_1 + A_{22_0}ik_2$

$k_1^2 + k_2^2$

2.2 Also Helpful

$v_{1_0}ik_1 + v_{2_0}ik_2$

$v_{1,x_{20}} + v_{2,x_{10}}$