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Instability Analysis of Poiseuille Flow of Suspensions Overlying Porous Media

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An instability analysis of Poiseuille flow of concentrated suspensions in a channel is studied. The Poiseuille flow with two layers where both dilute and concentrated suspensions flow is overlaid by a soft porous media is considered for the analysis. The Brinkmann equation together with continuity equation is used to describe the fluid in the porous media. A suspension balance model is used to calculate the velocity profile of the suspensions flow at $0 < Re < 100$. The stability analysis is carried out via spectral model perturbation. By limiting the volume fraction, ϕ ranging from $1\% - 5\%$, the results are validated with the previous work, where pure Newtonian fluid is overlaid by the porous media.

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References

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