Long Wave stability criteria for paralell miscible flow MAR-
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Southern California — We analyze the stability of miscible fluid paralell flow (x
direction) with a given transverse viscosity (or velocity) profile, N(y) in 2D or N(r)
for axisymmetric flow (pipe flow). From the Navier-Stokes and Convection-Diffsion
equations, we derive the eigenvalue problem. In the Long Wave limit which corre-
sponds to Stokes flow, and for the diffusionless regime (Peclet numner infinite), we
derive criteria for instability to occur depending on the shape of the velocity profile
for shear and Poiseuille flows in 2D and for the axisymmetrical geometry. A series
of generic transverse velocity profile examples are analyzed.

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