LInear stability analysis of granular Taylor-Couette flow MEHE-
BOOB ALAM, Jawaharlal Nehru Centre, Bangalore — The linear stability analysis
of the circular Couette flow of granular materials is carried out in the rapid shear
regime. The kinetic-theory based continuum models, with a separate balance equa-
tion for granular/fluctuation energy, is employed, and the underlying rheological
model is likely to be valid for a range of density from the dilute to dense regime.
The steady base state equations for the case of rotating inner cylinder and station-
ary outer cylinder are solved numerically; it is found that the inelastic dissipation
can make the flow radially inhomogeneous even in the narrow-gap limit. The lin-
ear stability equations are solved using spectral collocation method. The onset of
Taylor-like vortices and the effects of inelastic dissipation and compressibility on
them are analysed.

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