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On the Linear Global Instability of a Rotating Disk Flow YU NISHIO, Tohoku University, KEUNSEOB LEE, Gifu University, SEIICHIRO IZAWA, YU FUKUNISHI, Tohoku University — Linear global instability in a rotating disk flow is investigated by a direct numerical simulation for $2\pi/68$ section of the disk. A sponge region, in which the velocity fluctuations inside a boundary layer are forced to damp, is used in the outer end. A short-duration disturbance of azimuthal mode 68 is introduced into the flow field at a high Reynolds number region, Re =930 or 1030, and the growth of the fluctuations is observed. The disturbances start to grow immediately after they are introduced and converge to a certain positive value, regardless of the location where the sponge region starts. The results suggest that the flow over an infinite rotating disk is globally unstable in the linear regime, which is inconsistent with the previous studies.

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