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Experimental analysis of the Strato-rotational Instability in a cylindrical Couette flow PATRICE LE GAL, MICHAEL LE BARS, IRPHE, UMR 6594, CNRS & Aix-Marseille Université — This study is devoted to the experimental analysis of the Strato-Rotational Instability (SRI). This instability affects the classical cylindrical Couette flow when the fluid is stably stratified in the axial direction. In agreement with recent theoretical and numerical analyses, we describe for the first time in detail the destabilization of the stratified flow below the Rayleigh line (i.e. the stability threshold without stratification). We confirm that the unstable modes of the SRI are non axisymmetric, oscillatory, and take place as soon as the azimuthal linear velocity decreases along the radial direction. This new instability is relevant for accretion disks.

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