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**Radiative instability of a strong anticyclonic vortex in a rotating and stratified fluid** JUNHO PARK, PAUL BILLANT, LadHyX, Ecole Polytechnique — In strongly stratified fluids, an axisymmetric vertical columnar vortex with an angular velocity  $\Omega$  is unstable because of a spontaneous radiation of internal waves. This radiative instability tends to be stabilized in the presence of a cyclonic background rotation  $\Omega_b$  so that it is generally expected to not affect large-scale vortices in geophysical flows. In contrast, we show that an anticyclonic vortex with low negative Rossby number  $Ro = \frac{\Omega}{\Omega_b} \geq -1$ , which is centrifugally stable, can be also unstable due to radiative instability when the azimuthal wavenumber  $m$  is sufficiently large:  $|m| \geq 3$ . This new radiative instability has been investigated for several vortex profiles and we have found that it occurs if the potential vorticity of the vortex has a sufficiently steep radial profile. The properties of this instability and its mechanism will be explained by an asymptotic analysis for large azimuthal wavenumber. Moreover, its importance for geophysical anticyclonic vortices such as meddies will be discussed.

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