Ergoregion instability in a fluid with vorticity

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We investigate perturbations in a rotational and incompressible fluid flow. Interested in the phenomenon analogous to the black hole ergoregion instability, we verify the influence of the vorticity in the instability associated with this fluid system, in the presence of a region in which the fluid flow velocity is greater than the speed of the perturbation. With this aim, we compute the quasinormal modes of the system, using two different numerical methods, obtaining an excellent numerical agreement between them. We find that the vorticity tends to diminish the ergoregion instability of the system.