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**Internal wave focusing by annular forcing: theory**[1] BRUNO VOISIN, LEGI (CNRS & Université de Grenoble), EVGENY ERMANYUK[2], Laboratoire de Physique, ENS de Lyon (CNRS & Université de Lyon), NATALIA SHMAKOVA, JAN-BERT FLÓR, LEGI (CNRS & Université de Grenoble) — Among the various mechanisms susceptible of leading to local intensification of internal wave energy, followed by breaking and ultimately mixing, a specific three-dimensional mechanism has received little attention so far: the geometric focusing of waves emitted by horizontally curved oscillatory forcing. We present a linear theory of annular forcing, based on the assumption that the annulus is slender, namely of negligible local curvature. Both complete focusing by an axisymmetric annulus and partial focusing by a truncated or horizontally modulated annulus are considered. The case of a torus, either thin (i.e. hula-hoop-like) or thick (i.e. doughnut-like), is studied in detail. Focusing is seen to arise in both cases and to yield significant isopycnal slopes, close to overturning, even at low oscillation amplitude. This effect is all the more pronounced as the Stokes number gets higher and the wave structure changes from unimodal to bimodal. Flat circular Gaussian topography is considered next and compared to the earlier work of Bühler & Muller (*JFM* 2007) and Grisouard & Bühler (*JFM* 2012). The oceanic relevance of the analysis is finally discussed.

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