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Wave focusing and related multiple dispersion transi- tions in plane Poiseuille flows FEDERICO FRATERNALE, Politecnico di Torino, GABRIELLE NASTRO, ISAE SUPAERO, Université de Toulouse, DANIELA TORDELLA, Politecnico di Torino — Motivated by the recent find- ing of a dispersive-to-nondispersive transition for linear waves in shear fluid flows, we accurately explored the wavenumber-Reynolds number parameters space in the limit of long waves. We discovered the ex- istence of regions having different dispersion and propagation features than their surroundings. These regions look like niches tilted by 45 in the log-log space and are nested in the dispersive, low-wavenumber, part of the map. This complex dispersion-propagation structure allows to quantitatively explain the focusing of different components of a wave- packet in sub-regions of the physical space and, as a consequence, the morphology of the wave-packet. In particular, the arrowed shape and the spatial spreading rates are described.

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