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Crosswaves induced by the vertical oscillation of a fully immersed vertical plate FREDERIC MOISY, Laboratoire FAST, Universite Paris-Sud, GUY-JEAN MICHON, Laboratoire FAST, UPMC, MARC RABAUD, Laboratoire FAST, Universite Paris-Sud, ERIC SULTAN, Laboratoire FAST, UPMC — Capillary waves excited by the vertical oscillation of a thin elongated plate below an air-water interface are analyzed using time-resolved measurements of the surface topography. A parametric instability is observed above a well defined acceleration threshold, resulting in a so-called cross-wave, a staggered wave pattern localized near the wavemaker and oscillating at half the forcing frequency. This cross-wave, which is stationary along the wavemaker but propagative away from it, is described as the superposition of two almost anti-parallel propagating parametric waves making a small angle of the order of 20 degres with the wavemaker edge. This contrasts with the classical Faraday parametric waves, which are exactly stationary because of the homogeneity of the forcing. Our observations suggest that the selection of the cross-wave angle results from a resonant mechanism between the two parametric waves and a characteristic length of the surface deformation above the wavemaker.

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