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Rapidly rotating flow in an oscillating split cylinder[1] PALOMA GUTIERREZ-CASTILLO, JUAN M. LOPEZ, Arizona State University — The flow in a rapidly rotating cylinder is studied numerically via spectral methods. The cylinder of radius a and length h is completely filled with fluid of kinematic viscosity ν. It is split in two at its half height, and the rapid rotation in the two halves is modulated periodically. The modulations set up thin oscillatory boundary layers on the endwalls and the sidewall. From the corners where endwalls and sidewall meet, as well as from the split in the two halves, inertial wave beams are emitted into the interior following the characteristic directions dictated by the dispersion relation. Due to finite viscosity and nonlinear flow conditions, the wave beams produce intricate patterns, formed by to constructive and destructive interferences as they self intersect, which vary with the modulation frequency.

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