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Liquid metal stirring by rotating localized magnetic field in a cylindrical container[1] SERGIO CUEVAS, MICHEL RIVERO, EDUARDO RAMOS, Center for Energy Research, National Autonomous University of Mexico — We study experimentally the flow in a shallow liquid metal layer (GaInSn) driven by an array of small rotating permanent magnets (12.7 cm diameter) located at the bottom of a cylindrical plexiglas container with a diameter of 203.2 cm. The fluid layer has 13 mm and the maximum analyzed rotation frequency is 7 Hz. The explored magnet arrays vary from one single magnet up to five magnets eccentrically located but equidistant at two different fixed radius. The radial velocity component is obtained using Ultrasound Doppler Velocimetry (UDV) and analyzed through the Fast Fourier Transform. The characteristic frequencies of the flow structures are determined and global flow patterns are approximately reproduced. The flow is also analyzed by image processing in those cases where a free surface oscillation appears and these results are compared with those obtained by UDV.

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