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Instabilities of thin layers of conducting fluids produced by time dependent magnetic fields JAVIER BURGUETE, Universidad de Navarra — We present the recent results of an experiment where thin layers of conducting fluids are forced by time-dependent magnetic fields perpendicular to their surface. We use as conducting fluid an In-Ga-Sn alloy, immersed in a 5% hydrocloric acid solution to prevent oxidation. The conducting layers have a circular shape, and are placed inside a set-up that produces the vertical magnetic field. Due to MHD effects, the competition between the Lorentz force and gravity triggers an instability of the free surface. The shape of this surface can adopt many different configurations, with a very rich dynamics, presenting azimuthal wave numbers between 3 and 8 for the explored parameters. The magnetic field evolves harmonically with a frequency up to 10Hz, small enough to not to observe skin depth effects and with a magnitude up to 0.1 T. Different resonant regions have been observed, for narrow windows of the forcing frequency. We have analysed the existence of thresholds for these instabilities, depending on the wave number and experimental parameters. These results are compared with others present in the literature.

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