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Magnetoresistance Jumps in Mesoscopic Hybrid Devices¹ ALI C. BASARAN, CARLOS MONTON, JUAN PEREIRO, IVAN K. SCHULLER, University of California - San Diego — We have studied the electrical transport of superconducting stripes (Nb and V) with periodically altered local magnetization. The local magnetization is controlled by the ferromagnetic states of Ni rings placed on top of the stripes. We observe a series of large resistance jumps as a function of external magnetic field (H_a). The jumps occur at temperature and current density dependent H_a values which indicate that they are probably not related to vortex pinning. Resistance jumps along with observed multiple steps in the current-voltage characteristics could be attributed to weak links induced by magnetic stray field or proximity effects originated by Ni rings in the superconducting area. The exact origin of these jumps is still under investigation.

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