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Magneto-thermal instabilities in irradiated high density MgB_2 compound E. VERDIN, Dpto. Fisica- U. Sonora, Mexico, A. DURAN, D.H. GALVAN, CCMC-UNAM, Mexico, E. EDEM, J. RICKARDS, I. F.-UNAM, Mexico, M.B. MAPLE, DPIPAP-U.C.-La joya-U.S.A., F. MORALES, R. ESCUDERO, IIM-UNAM, Mexico — The effects of irradiation with low dosages of γ-rays, protons and electrons on the magnetization and critical current density of MgB_2 bulk samples were studied. Magnetic susceptibility measurements present a transition temperature with diamagnetic signal at $\sim$38.5 K. Magneto-thermal instabilities as flux jumps are observed in the magnetization hysteresis loops below 23 K, for all samples. The flux jump behavior is independent of the irradiation. The number of flux jumps decreases as the temperature increases. The magneto-thermal instabilities observed is a competing process between the Lorentz and pinning forces that depend on the bath temperature as well as on the defect density that influence the current density. The field dependence of the critical current density, J_C was evaluated using the Bean's model for different temperatures (from 2, 10, 15, and 20 K). The results show instabilities in the critical current, J_C, below 10 K as a consequence of the flux jumps events observed in the isothermal magnetization curves. In this presentation we will analyze the influence of the flux jumps on the critical currents densities.

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