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Plasma Wakefield Excitation in a Cold Magnetized Plasma for Particle Acceleration[1] MITHUN KARMAKAR, NIKHIL CHAKRABARTI, Saha Institute of Nuclear Physics, SUDIP SENGUPTA, Institute for Plasma Research — A numerical study has been done to find a travelling wave solution for a highly relativistic electron beam driven cold magnetized plasma. The presence of magnetic field has an effect to reduce thetransformer ratio (the ratio of energy gain to the drive beam energy) from its unmagnetized value. The effects of beam shape and the non-relativistic ion motion on the nonlinear structures of different dynamical variables are also discussed. The results owe its significance in the laboratory context of particle acceleration or in the study of generation of ultrahigh accelerating charged particle by strong plasma wave in astrophysical situations.

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