

COSMIC-RAY TRANSPORT IN SELF-EXCITED TURBULENCE

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First order Fermi acceleration at the outer shocks of supernova remnants is believed to be an efficient process. If this is indeed true, the effect of the cosmic-ray pressure on the fluid properties of the upstream plasma, can not be neglected. It is well known that the resulting pressure gradient leads to the production of an extended shock precursor. It has been suggested by Bell (2004) that cosmic rays in the precursor will also have a strong influence on the macroscopic properties of the magnetic field. Observational evidence of bright X-ray synchrotron rims in several young supernova support this theory. Amplification of the magnetic field beyond the linear regime, via the non-resonant current driven instability is investigated. We report on numerical calculations of magnetic field growth and the resulting transport properties of relativistic particles in the amplified field.