

Reverse Dynamo Mechanism in White Dwarf's 2-Temperature Relativistic Electron-Ion Outer Layer

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We investigated the acceleration/generation of the large-scale magnetic field and flow due to Unified Reverse Dynamo Mechanism in White Dwarf's 2-Temperature relativistic electron-ion outer layer, when a hot e-i fraction is added to the bulk degenerate e-i fluid,. We have shown the generation/amplification of fast macro-scale degenerate flows, as well as of hot flows from initial turbulent (micro-scale) magnetic/velocity fields. It is found that like in the classical case, the generation of macro-scale flows is an essential consequence of the magneto-fluid coupling; We have also found, that along with degeneracy level and temperature of hot contamination, dispersion plays an extremely important role in acceleration/generation of large-scale magnetic field and flow. For small k , real roots of dispersion relation are defining the process of either straight Dynamo or Reverse Dynamo. For big k the generation of strong macro-scale fast, locally Super-Alfvénic, flow is guaranteed. However, independent from dispersion, the generated macro-scale hot flow is always stronger than the degenerate flow.

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