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Exact relativistic viscous fluid solutions in near horizon extremal Kerr background ANA-MARIA PISO, MIT — Realistic accretion disk models require a number of ingredients, including viscous fluids, electromagnetic fields and general relativistic corrections. Close to the innermost stable circular orbit (ISCO) the latter can be appreciable and (quasi-)Newtonian approximations become unreliable. This is particularly true for nearly extremal black holes like GRS 1915+105, where the ISCO almost coincides with the black hole horizon. To describe the physics close to the ISCO adequately in a simplified model we approximate the nearly extremal Kerr geometry by the near-horizon extremal Kerr geometry and construct in this background relativistic viscous fluid solutions with electromagnetic fields. We discuss some applications of our solutions.

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