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Holographic superconductors with nonlinear Born - Infeld-type electrodynamics

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Holographic s-wave superconductors in the framework of nonlinear Born-Infeld-type electrodynamics is investigated in the background of Schwarzschild anti-de Sitter black holes. As particular cases, at some model parameters, we obtain results for Born-Infeld and exponential electrodynamics. We explore the analytical Sturm-Liouville eigenvalue problem in the probe limit where the scalar and electromagnetic fields do not effect on the background metric. The critical temperatures of phase transitions and order parameters are calculated which depend on the model parameter. We show that the critical exponent near the critical temperature is $1/2$.

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