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## **Thermodynamics of Non-linear magnetic-charged AdS black hole surrounded by quintessence, in the background of perfect fluid dark matter**

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In this work, we study the thermodynamic features of a non-linear magnetic-charged AdS black hole surrounded by quintessence, in the background of perfect fluid dark matter (PFDM). After having constructed the corresponding metric, we put out the mass and the temperature of the black hole, in order to get its entropy. Subsequently, we find the expression of the pressure which leads us to get the table of critical values and the isothermal diagram. Especially, we find that the critical values of the temperature and the pressure increase as the dark matter parameter increases. Also, analysing the isothermal diagram, we observe a van der Waals-like behaviour remarked by the presence of a first-order phase transition when we cross the critical temperature. Additionally, we compute and plot the heat capacity of the black hole and find that a second-order phase transition occurs, leading the black hole to move from stable phase to unstable one. Furthermore, it comes out that this phase transition point is shifted towards higher values of the horizon radius, as we decrease the dark matter density and increase the quintessence density.

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