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QCD phase diagram in the $T - eB$ plane for pion masses beyond its physical value

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It is interesting to observe the effect of the pion mass beyond its physical value on the QCD phase diagram in the $T - eB$ plane. The fate of the inverse magnetic catalysis (IMC) and the behaviour of T_{CO} beyond the physical point are of particular interest. Lattice QCD studies hint at a possible elimination of IMC effects with increasing pion mass. We aim to understand the entire problem from an analytical perspective using effective models. We find that effective models can align with lattice results and are capable of capturing the underlying mathematical structure of the theory.

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