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## Phase diagram of hot QCD in an external magnetic field

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The structure of the phase diagram for strong interactions becomes richer in the presence of a magnetic background, which enters as a new control parameter for the thermodynamics, and can exhibit new phases and interesting features. Motivated by the relevance of this physical setting for current and future high-energy heavy ion collision experiments and for the cosmological QCD transitions, we use the linear sigma model coupled to quarks and to Polyakov loops as an effective theory to investigate how the chiral and the deconfining transitions are affected, and present a general picture for the temperature-magnetic field phase diagram. We compute and discuss each contribution to the effective potential for the approximate order parameters, and uncover new phenomena such as the paramagnetically-induced breaking of  $Z(3)$ .

**Primary authors:** Ms MIZHER, Ana J\'ulvia (Instituto de F\'isica, Universidade Federal do Rio de Janeiro); Prof. FRAGA, Eduardo (Instituto de Fisica, Universidade Federal do Rio de Janeiro); Dr CHERNODUB, Maxim (LMPT, CNRS UMR 6083, F\'eder\'eration Denis Poisson, Universit\'e de Tours)

**Presenter:** Prof. FRAGA, Eduardo (Instituto de Fisica, Universidade Federal do Rio de Janeiro)

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