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Functional renormalization group study of the quark-meson model with omega and rho vector mesons

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The functional renormalization group (FRG) is a non-perturbative method that considers quantum and thermal fluctuations. Using the FRG flow equations, the critical region of the two-flavor quark-meson model in a finite isospin chemical potential with omega and rho vector mesons interactions is investigated in this work. We also use the traditional mean-field method to calculate the phase diagram in the chiral limit for comparison. The results show that the influences of the omega meson and rho meson on the phase structure are quite different. The existence of the isospin chemical potential also causes significant changes in the phase structure

Presenter: OSMAN, Mohammed

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