## Excited QCD 2022



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## The QCD phase diagram and the critical end point at large $N_c$

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We investigated the QCD phase diagram at large  $N_c$  in a Polyakov loop extended quark-meson model with particular attention to the critical point(s). An exciting behavior was seen, as the well-known  $N_c = 3$  CEP disappears rapidly and leaves a crossover transition in the whole phase boundary. Furthermore, for large enough  $N_c$ , a distinct CEP emerges along the temperature axis. Moreover, besides the confined chirally broken and the deconfined chirally symmetric phase, the quarkyonic-type phase was found, which shows confinement and chiral restoration. For these regions of the phase diagram, the pressure also had the expected  $N_c^0$ ,  $N_c^2$ , and  $N_c^1$  scaling, respectively.

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