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Criticality in the N-flavor London model[1] ASLE SUDBO[2], NTNU, JO SMISETH, NTNU, EIVIND SMORGRAV, NTNU, EGOR BABAEV, NTNU —
We consider the critical properties of N-flavor London model in $d = 2+1$ dimensions in the phase-only approximation, with *no inter-flavor Josephson coupling*. The model applies to superconducting phases of projected metallic states of light atoms and as effective theories for easy-plane quantum antiferromagnets. MC simulations with $N = 2$ and unequal bare phase stiffnesses of the components show two anomalies in the specific heat. From the critical exponents α and ν, the mass of the gauge field, and vortex correlation functions, we conclude that these anomalies correspond to an *inverted* 3Dxy and a 3Dxy fixed point. The $N = 2$ model with equal phase stiffnesses exhibits one *non*-3Dxy critical point due to self-duality. For $N = 3$ and unequal bare phase stiffnesses we find two neutral 3Dxy fixed points and one charged fixed point. The model with the two lower phase stiffnesses equal exhibits one neutral fixed point and one charged fixed point. We find a *non*- 3Dxy fixed point with $N = 3$ and equal bare phase stiffnesses. For the general N-flavor model with unequal phase stiffnesses there are N fixed points, namely one inverted 3Dxy fixed point, and $N - 1$ fixed points in the (neutral) 3Dxy universality class. Hence, we find superfluid modes arising from charged condensates.

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[2]Talk will be presented by J. Smiseth

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