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**Phase Diagram of Quark Matter at Finite Temperature and Density in the Strong Coupling Limit Lattice QCD with  $N_c = 3$**  AKIRA

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— Exploring various phases of quark and nuclear matter has recently attracted much attention both from theoretical and experimental sides. For cold baryon rich matter, the first principle lattice QCD simulation is not yet available then it is necessary to invoke some approximations in QCD or to apply some effective theories. We study here nuclear matter at finite temperature and density in the strong coupling limit (SCL) lattice QCD. It is already shown that SCL can describe chiral phase transition at finite temperature<sup>1</sup>. At finite densities, we may have diquark condensate, which has color and cannot be an order parameter as it is in lattice QCD. Because of this difficulty, studies are limited to  $N_c = 2$  case<sup>2</sup> or zero temperature<sup>3</sup>. We have recently developed a way to extract the color singlet combination from diquark condensates. In the presentation, we explain how we can define and extract color singlet order parameter, and discuss color and chiral condensates in dense matter.

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