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Shear viscosity of ultrarelativistic Boson systems in the presence of Bose-Einstein condensate

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We calculate the shear viscosity of ultrarelativistic Boson systems in the presence of Bose-Einstein condensate (BEC). Two different methods are used. One is the Grad's method of moments and another is the Green-Kubo relation within a kinetic transport approach. In this work we consider a Boson system with isotropic elastic collisions and a gluon system with elastic scatterings described by perturbation QCD (pQCD). The results show that the presence of BEC lowers the shear viscosity. This effect becomes stronger for the increasing proportion of the BEC in the Boson system and is insensitive to the detail of interactions.

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