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PHENIX results on low-mass dileptons in Au+Au collisions with the Hadron Blind Detector

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Dileptons are an important probe of the dense medium created in heavy-ion collisions, with sensitivity to chiral symmetry restoration, thermal radiation and in-medium effects. The PHENIX Hadron-Blind Detector (HBD), which took data during RHIC runs 2009–2010, is a proximity-focusing \v{C}erenkov detector operated with pure CF4, directly coupled to a triple GEM readout in a windowless configuration. The HBD was designed to improve the measurement of low-mass dileptons with the aim of confirming or refuting the earlier PHENIX measurement of a strong excess of low-mass di-electrons in central Au+Au collisions. A new, significantly improved analysis procedure has been developed that enables a quantitative understanding of the background in the low-mass region at a sub-percent level. We present the final di-electron results obtained with the PHENIX HBD for Au+Au collisions at $\sqrt{s_{NN}}$=200 GeV, including invariant mass spectra, transverse momentum distributions, and centrality dependence. The results will be compared to published results and to model calculations.

On behalf of collaboration:

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