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Characterising the hot and dense fireball with virtual photons at HADES

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Electromagnetic particles offer a unique opportunity to study the conditions in heavy-ion collisions throughout their whole evolution. Once created, these probes can travel largely unhindered through the strongly interacting medium and bring direct information from their origins to a detector. Virtual photons, decaying into lepton pairs, serve as particularly interesting because they also carry additional information in their invariant mass. In this contribution, measurements of such dileptons are presented. Based on high statistics experiments of Au+Au and Ag+Ag collisions, collected at the High-Acceptance-DiElectron-Spectrometer (HADES), at $\sqrt{s_{NN}}=2.42$ GeV and $\sqrt{s_{NN}}=2.55$ GeV respectively, various dilepton observables have been extracted. This includes the invariant mass spectra, which also allow a determination of the fireball temperature, as well as the overall dilepton yield, which can be connected to the lifetime of the fireball. Furthermore, first results on the dilepton anisotropy and anisotropy coefficients are presented, giving more insights into the collective properties of the hot and dense medium.

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