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Photon-photon femtoscopy in Ag+Ag collisions at $\sqrt{s_{NN}} = 2.55$ GeV

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The study of femtoscopic correlations between photon pairs, although challenging from an experimental standpoint, can serve as a complementary approach to traditional hadron femtoscopy. Owing to the penetrative nature of photons, which are unaffected by strong or electromagnetic interactions, such measurements can be used to probe the early stages of heavy-ion collisions, prior to freeze-out. Furthermore, since femtoscopy is sensitive to the emission sequence of particles, it may provide the potential to distinguish between the femtoscopic signals of direct photons and decay photons, thus enabling the estimation of direct photon yields. As part of the FAIR/GSI scientific complex, the HADES experiment focuses on detecting light vector mesons through dielectron (e^\pm) channels produced in high-energy heavy-ion collisions at energies of approximately 1–2 A GeV. With the presence of electromagnetic calorimeters, HADES is also capable of direct photon detection, facilitating femtoscopic measurements.

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Preliminary results from Ag+Ag collision data at will be presented.

Keywords: HADES, femtoscopy, photons

Auteur principal: GRUNWALD, Mateusz (Warsaw University of Technology)

Orateur: GRUNWALD, Mateusz (Warsaw University of Technology)