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Measurement of Low Mass Muon Pairs in Sulphur – Nucleus Collisions with an Optimized HELIOS Muon Spectrometer

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Dileptons provide a unique and specific tool to detect collective behaviour and to probe for signs of quark gluon plasma formation in nucleus – nucleus interactions. In particular, in the low transverse mass region, below the rho meson, dimuons probe the thermal nature of the interaction while their multiplicity dependence can indicate nuclear volume effects.

This experiment uses the unchanged HELIOS muon spectrometer and a combination of a new carefully designed light absorber, at an optimized distance from the target, and multiplicity measurements covering more than the muon rapidity acceptance. It thereby intends to improve in quality and quantity on the low mass, low p_T dimuon signal already observed in the NA34/2 experiment. The wide range of rapidity from 3.5 to 6.0 will enable us to explore the rapidity dependence of the signal from high energy density at nearly central rapidity up to very forward rapidities.

References

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