## XIV Polish Workshop on Relativistic Heavy-Ion Collisions: Interplay between soft and hard probes of heavy-ion collisions



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## Multi-differential measurement of correlated pion-proton pairs in Heavy Ion Collisions

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The study of hadron formation, interaction and their properties in hot and dense QCD matter is one of the main topics in sub-nuclear physics. The short-lived states ( $\sim$ 1 fm/c), produced and decayed within the QCD matter contain fundamental information about the surrounding medium created in collisions of heavy-ions at relativistic energies as well as about the interaction. HADES measures rare and penetrating probes in the regime of 1-2 GeV kinetic energy per nucleon. Excitation of baryonic resonances is a key mechanism for meson, dilepton and strangeness production. The measured multi-differential spectra of mass, rapidity and transverse momentum of  $\pi^+p$  and  $\pi^-p$  correlated pairs from Au+Au collisions are going to be presented in this contribution as well as future research of correlations and femtoscopy in ALICE.

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