Measurement of low-mass dielectrons in p-Pb collisions at $\sqrt{s_{\mathrm{NN}}} = 5.02$ TeV with Alice

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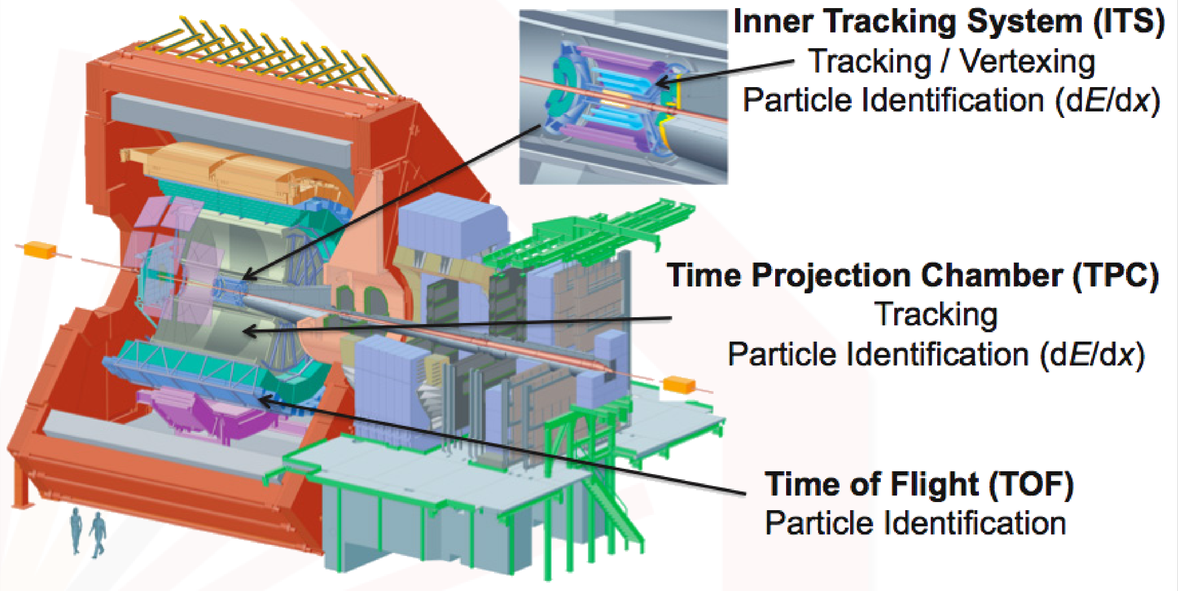
MOTIVATION

Low-Mass Dielectrons

- Formed in all stages of the collision
- Negligible final-state interactions
- Important probe for medium effects in heavy-ion collisions
- Dielectron production in p-Pb collisions probe possible cold nuclear matter effects

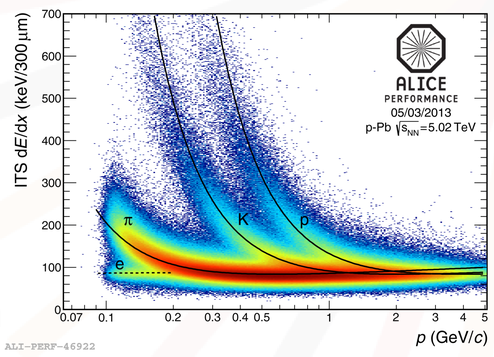
A Large Ion Collider Experiment (ALICE)

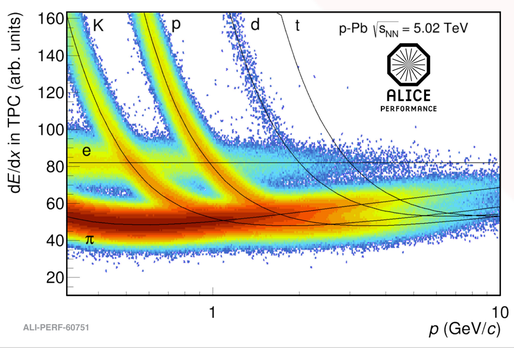


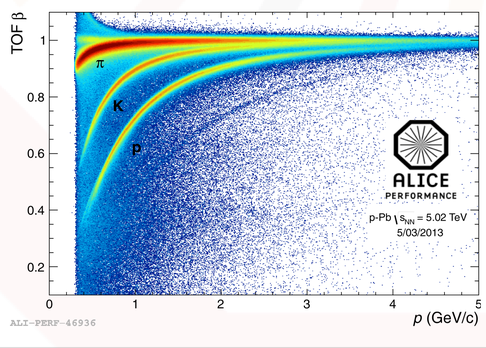
ELECTRON IDENTIFICATION

Combined information from ITS, TPC and TOF

ITS electron inclusion
TPC electron inclusion, pion exclusion
TOF kaon and proton rejection







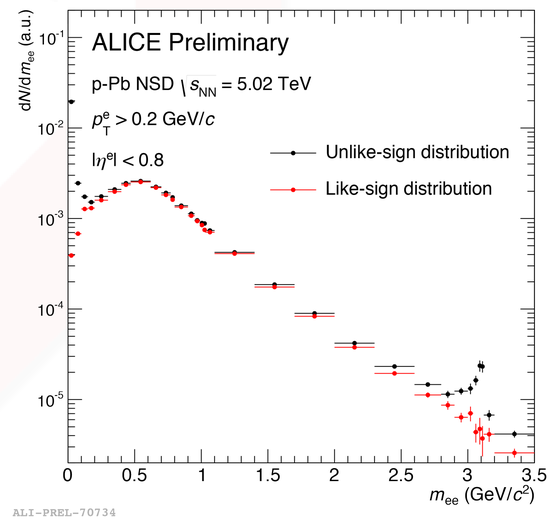
SIGNAL EXTRACTION

- Construct all possible unlike-sign pair combinations per event
- Combinatorial background is estimated by like-sign distribution

$$N_{\mathrm{LS}} = 2\ R\ \sqrt{N_{++}\ N_{--}}$$

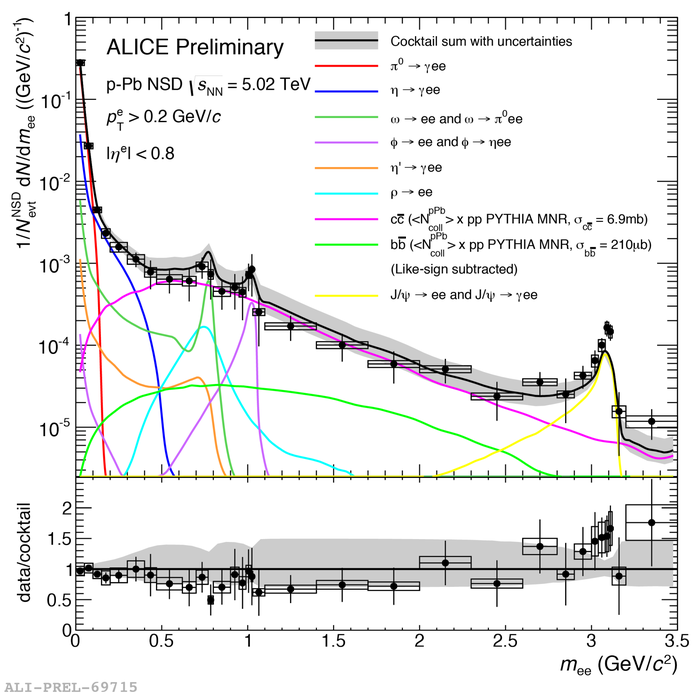
Acceptance correction factor R from mixed events

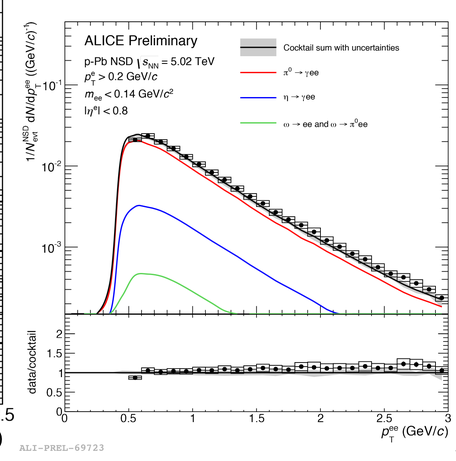
- 2013 p-Pb data at $\sqrt{s_{\mathrm{NN}}} = 5.02$ TeV
1.2×10^8 minimum-bias events ($\mathcal{L}_{\mathrm{int}} = 0.57\ \mathrm{nb}^{-1}$)

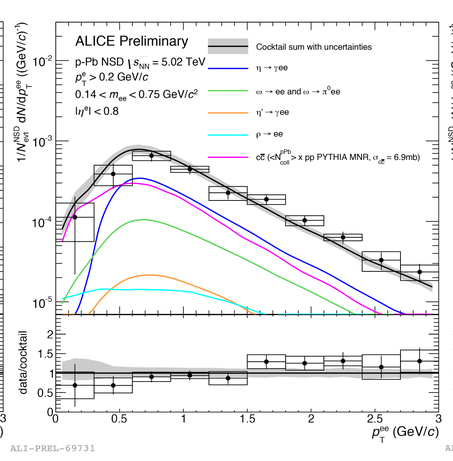


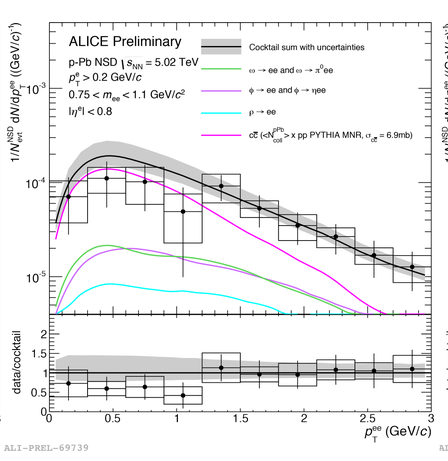
RESULTS

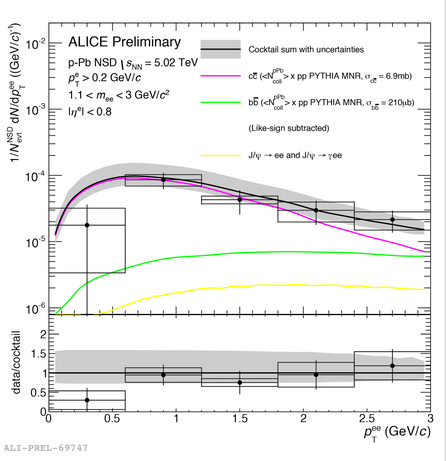
- The spectra are in agreement with the cocktail of all hadronic sources of dielectrons within the statistical and systematic uncertainties
- Ongoing detailed analysis should constrain $c\bar{c}$ and $b\bar{b}$ cross section











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