

# Quark Matter 2019 - the XXVIIIth International Conference on Ultra-relativistic Nucleus-Nucleus Collisions



Contribution ID: 695

Type: **Poster Presentation**

## Sensitivity to detect ultra-intense magnetic field in Pb-Pb collisions via dimuon polarization measurement at the ALICE experiment

*Monday 4 November 2019 17:40 (20 minutes)*

In non-central nucleus-nucleus collisions, an ultra-intense magnetic field reaching  $10^{15}$  [Tesla] is generated. Many interesting phenomena such as non-linear QED and Chiral Magnetic Effect are expected to be induced under the field. Nucleus-nucleus collisions are the only one way to generate such a field and to study the field-induced phenomena experimentally.

Di-leptons from virtual photons are a unique tool for probing such an ultra-intense magnetic field because virtual photons should decay into di-leptons with nonuniform decay planes with respect to the field due to the field-induced birefringence in vacuum.

To get more precise data, ALICE will install a new detector "Muon Forward Tracker (MFT)" in front of hadron absorber of Muon Spectrometer. MFT allows us to approach more accurate information about vertex of dimuons. This is expected to reduce background muons mainly from charged pions or kaons.

In this poster, the sensitivity for detecting the field by polarization of di-muons from virtual photons will be discussed.

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**Session Classification:** Poster Session

**Track Classification:** Electromagnetic probes