



Contribution ID: 225

Type: **Parallel Session Talk**

Frame-independent angular distributions as density matrix invariants

Wednesday 10 April 2019 09:55 (17 minutes)

The dilepton angular distribution in vector particle decays can be described through a set of five $SO(3)$ rotational-invariant observables. These observables are derived as invariants of the spacial part of the hadronic tensor (density matrix) expressed in terms of angular coefficients. The restrictions on the invariants following from the positivity of the hadronic tensor are obtained. Special cases of $SO(2)$ rotations are considered. Calculation of invariants for available data on Z and J/ψ decays is performed.

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Session Classification: WG6: Spin and 3D structure

Track Classification: WG6: Spin and 3D structure