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Polarization of exclusive di-electron production in pion-nucleon collisions

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A study of the polarization of the virtual photon in the process $\pi N \rightarrow N e^+ e^-$ is presented [E. Speranza, M. Zetenyi, and B. Friman (to be published)]. An effective relativistic Lagrangian model containing baryon resonances up to spin-5/2 is employed to compute the spin-anisotropy coefficient for isolated intermediate baryon resonances. It is shown that a given spin state of the intermediate resonance exhibits a characteristic angular dependence of the spin-anisotropy coefficient. Furthermore, the anisotropy coefficient resulting from the interference between resonances with different spin is presented. Our results show that the polarization of the photon provides information that is useful for disentangling the resonance contributions to elementary di-lepton production processes [W. Przygoda (HADES Collaboration), talk presented at The 10th International Workshop on the Physics of Excited Nucleons, NSTAR2015, 25-28 May 2015, Osaka]. Moreover, it is argued that the study of polarization observables can provide information on the production process and equilibration mechanism in heavy-ion collisions.

On behalf of collaboration:

NONE

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