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Spin alignment measurements of K∗0 vector mesons in ALICE at the LHC

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Spin alignment of K^{*0} vector mesons produced in non-central heavy-ion collisions could occur due to the presence of large angular momentum and large magnetic field expected in the initial stages of the collisions. This phenomenon leads to a non-uniform angular distribution of the decay daughters of K^{*0} with respect to its quantization axis in the rest frame of K^{*0}. This quantization axis can be the normal to the production plane (plane subtended by the K^{*0} momentum and the beam axis) or normal to the reaction plane (defined by the impact parameter and the beam axis) of the system. The study of the angular distribution leads to the estimation of the spin density matrix element ρ_{00}. A significant deviation of the value of ρ_{00} from 1/3 would indicate the presence of spin alignment.
We will present recent ALICE results from the spin alignment study of K^{*0} vector mesons at mid-rapidity in Pb-Pb collisions and in pp collisions at center of mass energies of 2.76 TeV, 5.02 TeV and 13 TeV, respectively. Transverse momentum and centrality dependence of ρ_{00} will be presented and the result will also be compared and discussed together with those obtained for ${K_s}^0$ (spin zero) mesons.

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