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Charm decay as a source of multistrange hadrons

In Pb–Pb collisions at sN N = 2.76 TeV at LHC, a rather large number of charm–anti-charm quark pairs, Ncc ≡ dNcc /dy, is produced in initial hard parton collisions before the QGP phase emerges. Given Ncc , we predict yields of all charmed hadrons using statistical hadronization method. We use the experimental D0 meson pT -spectrum to estimate the range of charm abundance present at hadronization to be Ncc = 6 – 45 cc pairs. About 20% of charm is bound to strangeness and, as a consequence, charm decays contribute a significant fraction of multistrange hadron yields. Based on experimental decay data, symmetry principles and plausibility arguments, we prepare a complete charmed hadron decay table. The CHARM module adds charm decay hadron multiplicity into SHARE, the statistical hadronization model implementation we use. SHARE with CHARM utility uses Ncc as an additional fit parameter when analyzing hadron production in heavy–ion collisions. We quantify the charm hadron decay contributions in the final hadron yields. Up to 20% of φ, 15% of Ξ and 15% of Ω yield is produced directly by charm decays, whereas non–strange particles are less affected, e.g. less than 7% of π yield originates directly in a charm hadron decay.

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