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Measurement of Ω_c^0 and Ξ_c^0 lifetime with prompt production at LHCb

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A measurement of the lifetimes of the Ω_c^0 and Ξ_c^0 baryons is reported using proton-proton collision data at a centre-of-mass energy of 13 TeV collected by the LHCb experiment. The Ω_c^0 and Ξ_c^0 baryons are produced directly from proton interactions and reconstructed in the $pK^-K^-\pi^+$ final state. The Ω_c^0 lifetime is measured to be $276.5 \pm 13.4 \pm 4.4 \pm 0.7$
fs, and the Ξ_c^0 lifetime is measured to be $148.0 \pm 2.3 \pm 2.2 \pm 0.2$
fs, where the first uncertainty is statistical, the second systematic, and the third due to the uncertainty of the D^0 lifetime. These results are consistent with previous LHCb measurements based on semileptonic b-hadron decays but inconsistent with PDG value before 2018, and provide the single most precise measurement of the \Omega_cˆ0 lifetime.

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