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Measurement of the CP-violating phase ϕ_s at LHCb

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Decays of the B_s meson via $b \rightarrow c \bar{c} s$ transitions such as $B_s^0 \rightarrow J/\psi K K$ and $B_s^0 \rightarrow J/\psi \pi \pi$ are sensitive to the CP-violating phase ϕ_s , which is known with a good precision from global fits based on the Standard Model. Physics beyond the Standard model can affect the B_s^0 - B_s^0 oscillations or contribute to second-order processes, introducing a sizable shift in ϕ_s and providing evidence for new dynamics. In addition, the B_s^0 decay width and the decay width difference between the B_s^0 mass eigenstates can be measured precisely in $b \rightarrow c \bar{c} s$ transitions. We present the first Run 2 measurements of these quantities at LHCb.

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