Contribution ID: **65** Type: **Oral presentation**

Measurement of the CP-violating phase ϕ_s in $B_s^0 \to J/\psi\phi$ decays in ATLAS at $13\ \mathrm{TeV}$

Saturday, 9 April 2022 12:30 (20 minutes)

A measurement of the $B_s^0 \to J/\psi\phi$ decay parameters using $80\ \mathrm{fb}^{-1}$ of integrated luminosity collected with the ATLAS detector from $13\ \mathrm{TeV}$ proton-proton collisions at the LHC is presented. The measured parameters include the *CP*-violating phase ϕ_s, the width difference $\Delta\Gamma_s$ between the B_s^0 meson mass eigenstates and the average decay width Γ_s. The values measured for the physical parameters are combined with those from $19.2\ \mathrm{fb}^{-1}$ of $7\ \mathrm{TeV}$ and $8\ \mathrm{TeV}$ data, leading to the following:
\begin{equation}
\phi_s=-0.087\pm0.036~(\mathrm{stat.})\pm0.021~(\mathrm{syst.})~\mathrm{rad}
\end{equation}
\begin{equation}
\Delta\Gamma_s=0.0657\pm0.0043~(\mathrm{stat.})\pm0.0037~(\mathrm{syst.})~\mathrm{ps}^{-1}
\end{equation}
\begin{equation}
\Gamma_s=0.6703\pm0.0014~(\mathrm{stat.})\pm0.0018~(\mathrm{syst.})~\mathrm{ps}^{-1}
\end{equation}
Results for ϕ_s and $\Delta\Gamma_s$ are also presented as 68% confidence level contours in the $\phi_s - \Delta\Gamma_s$ plane. Furthermore, the transversity amplitudes and corresponding strong phases are measured. ϕ_s and $\Delta\Gamma_s$ measurements are in agreement with the Standard Model predictions.

Career stage

Graduate student

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Session Classification: B and Top