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Observation of $B^+ \to \psi(2S)\varphi K^+$ REDDY PRATAP GANDRAJULA, Univ of Iowa, CMS COLLABORATION — The high luminosity and large cross section for b-quark production at the LHC makes possible the observation and study of many rare B meson decays. Recently, CMS reported on the presence of substructures in the known decay $B^+ \to J/\psi\varphi K^+$. As part of that investigation, the final state $B^+ \to \psi(2S)\varphi K^+$, with $\psi(2S) \to \mu^+\mu^-$and $\varphi \to K^+K^-$was also observed. We report the signal, with a significance of over 5 standard deviations using 19.6 fb^{-1} data collected at $\sqrt{s} = 8$ TeV at CMS, and its branching fraction measurement.

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