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## Observation of $B_s \rightarrow D_s^{*-} \pi^+$ , $B_s \rightarrow D_s^{(*)-} \rho^+$ and $B_s \rightarrow D_s^{(*)+} D_s^{(*)-}$ and Estimate of $\Delta\Gamma_{CP}$ at Belle

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The large data sample being recorded with the Belle detector at the  $Y(5S)$  energy provides a unique opportunity to study the poorly-known  $B_s$  meson decays. Following our recent measurement of  $B_s \rightarrow D_s \pi$  in a sample of  $23.6 \text{ fb}^{-1}$ , we extend the analysis to include decays with photons in the final state. Using the same sample, we report the first observation of three other dominant exclusive  $B_s$  decays, in the modes  $B_s \rightarrow D_s \pi^+$ ,  $B_s \rightarrow D_s \rho^+$  and  $B_s \rightarrow D_s \rho^+$ . We measure their respective branching fractions and, using helicity-angle distributions, the longitudinal polarization fraction of the  $B_s \rightarrow D_s \rho^+$  decay. We also present a measurement of the branching fractions for the decays  $B_s \rightarrow D_s^+ D_s^{*-}$ . In the heavy quark limit, this branching fraction is directly related to the width difference between the CP-odd and CP-even  $B_s$  states.

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