

Supplementary material for LHCb-PAPER-2024-157

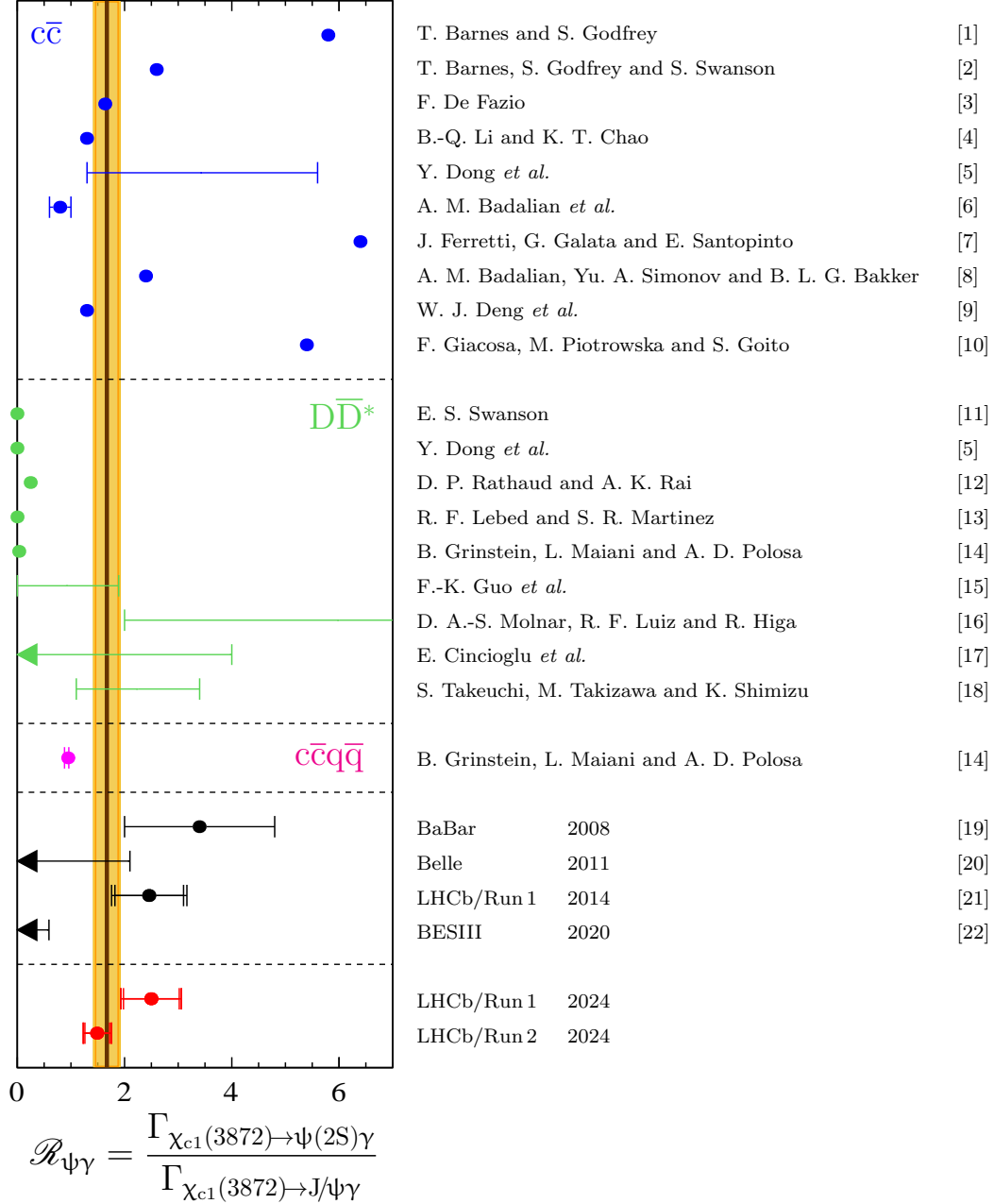


Figure S1: Summary of experimental results and theoretical predictions for the ratio of the partial decay widths for the radiative $\chi_{c1}(3872) \rightarrow \psi(2S)\gamma$ and $\chi_{c1}(3872) \rightarrow J/\psi\gamma$ decays. The results from this analysis for Run 1 and Run 2 data sets are shown with red points with error bars, and the coloured band corresponds to average of these LHCb results. The inner error bars (and the band) indicate the statistical uncertainty whilst the outer error bars (and the band) show the sum of the statistical and systematic uncertainties in quadrature. Previous experimental results are shown in black. Predictions from $c\bar{c}$ charmonium, $D\bar{D}^*$ molecular and compact tetraquark models are shown in blue, green and magenta, respectively.

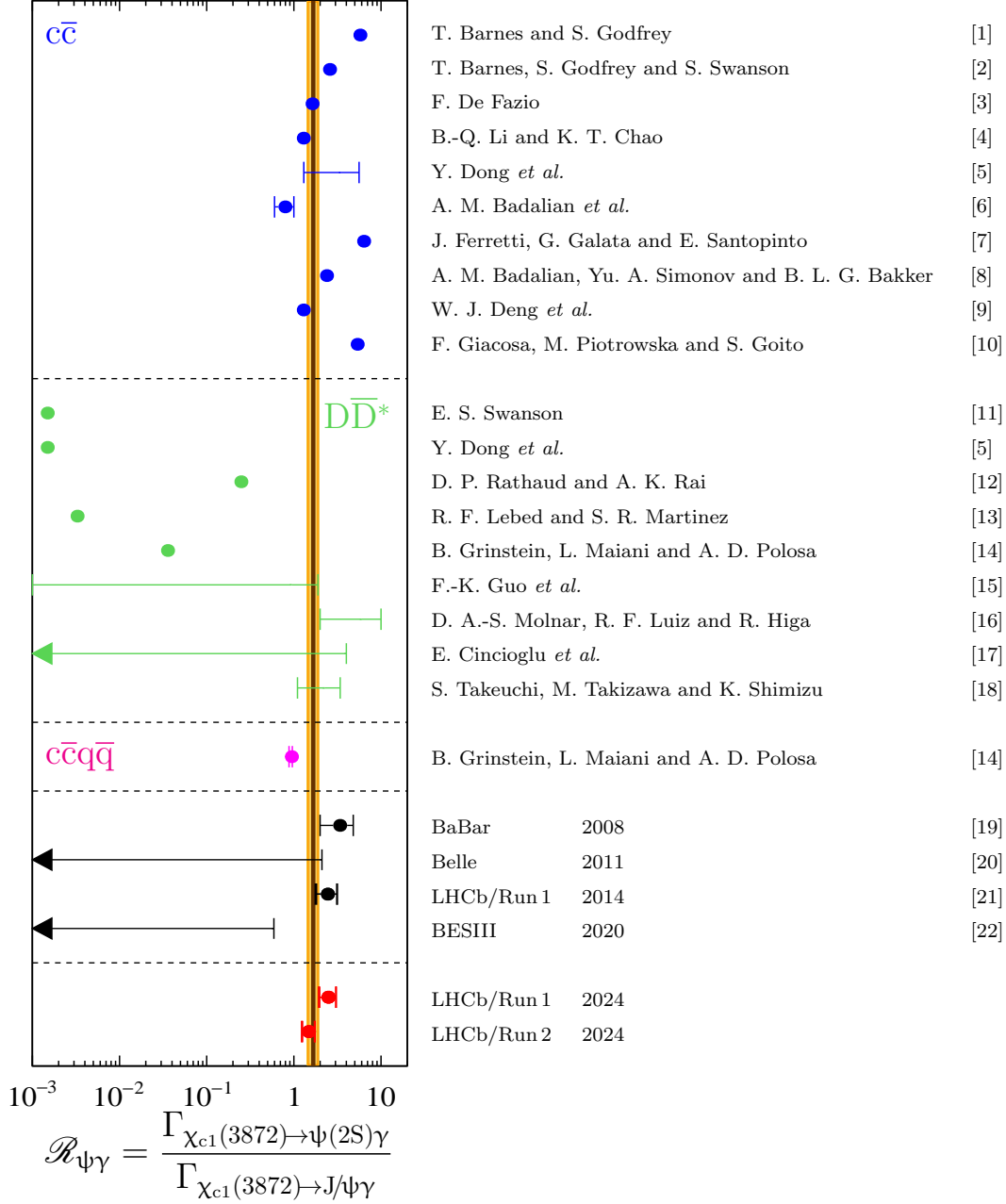


Figure S2: Summary of experimental results and theoretical predictions for the ratio of the partial decay widths for the radiative $\chi_{c1}(3872) \rightarrow \psi(2S)\gamma$ and $\chi_{c1}(3872) \rightarrow J/\psi\gamma$ decays. The results from this analysis for Run 1 and Run 2 data sets are shown with red points with error bars, and the coloured band corresponds to average of these LHCb results. The inner error bars (and the band) indicate the statistical uncertainty whilst the outer error bars (and the band) show the sum of the statistical and systematic uncertainties in quadrature. Previous experimental results are shown in black. Predictions from $c\bar{c}$ charmonium, $D\bar{D}^*$ molecular and compact tetraquark models are shown in blue, green and magenta, respectively.

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