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Lattice QCD calculation of the semileptonic decay $J/\psi \rightarrow D/D_s l \nu_l$

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We perform the first lattice calculation on the semileptonic decay of J/ψ using the (2+1)-flavor Wilson-clover gauge ensembles generated by CLQCD collaboration. After a continuum extrapolation using three lattice spacings, we obtain the final branching fraction of $J/\psi \rightarrow D/D_s e \nu_e$. The ratios of the branching fractions between lepton μ and e are also calculated and given by $R_{J/\psi}(D)$ and $R_{J/\psi}(D_s)$, which provide necessary theoretical supports for the experimental test of lepton flavour universality in the future.

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