Contribution ID: **52** Type: **Poster contribution**

Search for the semi-muonic weak decay Jpsi to D mu nv

Saturday, 15 April 2023 17:30 (2h 30m)

Charmonium weak decay is allowed in the Standard Model but has never been observed. Using $(10087 \pm 44) \times 10^6$ J/ψ events collected with the BESIII detector at the BEPCII e^+e^- storage ring at the center-of-mass energy of $\sqrt{s} = 3.097$ GeV, we present a search for the charmonium rare semi-muonic decay $J/\psi \to D^-\mu^+\nu_\mu$ and its charge conjugation (*c.c.*) mode. Since no significant signal above the background is observed, we set an upper limit of the branching fraction to be $\mathrm{BF}(\mathrm{J}/\psi \to \mathrm{D}^-\mu^+\nu_\mu + \mathrm{c.c.}) < 5.6 \times 10^{-7}$ at a confidence level of 90%. This is the first search for the weak decay of charmonium with a muon in the final state and the measurement is compatible with the SM theoretical predictions.

Primary author: Mr LI, Zhijun (Sun Yat-sen University)

Presenter: Mr LI, Zhijun (Sun Yat-sen University)

Session Classification: Poster session and buffet dinner

Track Classification: Searches for rare processes