

R value measurements at BESIII

Monday, 5 June 2023 15:35 (20 minutes)

The R value, defined as the ratio of inclusive hadronic cross section over dimu cross-section from electron-positron annihilation, is an important quantity that contributes to the SM prediction of the muon anomalous magnetic moment, and in the determination of the QED running coupling constant evaluated at the Z pole. At BESIII, the R value is measured with a total of 14 data points with the corresponding c.m. energy going from 2.2324 to 3.6710 GeV. The statistical uncertainty of the measured R is less than 0.6%. Two different simulation models, the LUARLW and a new Hybrid generated, are used and give consistent detection and initial-state radiation corrections.

An accuracy of better than 2.6% below 3.1 GeV and 3.0% above is achieved in the R values. The precise measurement will be used to calculate the muon anomalous magnetic moment and QED running coupling.

Primary author: LIU, Beijiang (Institute of High Energy Physics)

Presenter: DE MORI, Francesca (Università degli Studi di Torino e Istituto Nazionale di Fisica Nucleare)

Session Classification: Hadrons and physics beyond the standard model

Track Classification: Hadrons and physics beyond the standard model