

Measurement of the multiplicity dependence of Υ
meson production in $p+p$ collisions
at $\sqrt{s} = 510$ GeV

Jaroslav Bielčík, **Jakub Češka**, Leszek Kosarzewski

April 2023

Measurements of Υ meson production in heavy-ion collisions allow the study of the properties of the quark-gluon plasma, such as in-medium modifications to the QCD force and the medium's thermodynamic properties. However, the quarkonium production mechanism is not completely understood even in vacuum, which is of great interest on its own and could also have significant consequences for interpreting Υ measurements in heavy-ion collisions.

In this poster, we present the latest measurements of Υ meson production via the dielectron channel in $p+p$ collisions at $\sqrt{s} = 510$ GeV recorded by the STAR experiment in 2017. The transverse momentum and rapidity spectra of three Υ states combined will be shown. We will also measure the dependence of self-normalised Υ meson yield on self-normalised charged particle multiplicity to probe the interplay between soft and hard processes. The presented analysis utilises a data sample with a significant increase in statistics compared to previous measurements, which results in improved precision and extended multiplicity reach.