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

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The study of quarkonium production in p+p collisions is of great interest in understanding the relative importance of mechanisms that contribute to its formation, which is an outstanding question. The investigation of the soft and hard processes involved in quarkonium formation is key in constraining the theoretical models and helping to differentiate between them.

This poster presents the preliminary measurements of the Υ meson production in the dielectron decay channel in p+p collisions at $\sqrt{s} = 510$ GeV at RHIC recorded by the STAR experiment. This includes the transverse momentum and mid-rapidity spectra of the combined Υ(1S+2S+3S) states, as well as the integrated production cross-section. The progress of measuring the dependence of self-normalised Υ meson yield on the self-normalised charged particle multiplicity is presented. This measurement is used to study the interplay of soft and hard processes during quarkonium formation. The analysis uses a significantly larger data sample than previous STAR measurements, up to 10 times the integrated luminosity, which improves the precision of the measurement.