Contribution ID: **213** Type: **Oral Presentations**

Online Luminosity Monitor at Belle II

Thursday, 7 September 2023 11:40 (20 minutes)

We describe a system used for online measurements of luminosity, utilizing elastic e^+e^- Bhabha scattering and two-photon annihilation processes reconstructed with the Belle II electromagnetic calorimeter. The Belle II experiment at the SuperKEKB asymmetric-energy e^+e^- collider is designed to achieve a luminosity of 6×10^{35} cm^{-2}s^{-1}. With the designed parameters of SuperKEKB, the statistical accuracy of the instantaneous luminosity measurement provided by the Online Luminosity Monitor is expected to be better than 1% within one second. The overall systematic uncertainty is estimated to be at the level of 1.7%. Comparison with a dedicated offline analysis and results on the long-term stability of the monitor's performance are also presented.

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Session Classification: F4