Contribution ID: **53**   Type: **Poster**

Performance of the Z Trigger under Luminosity Conditions: First Experience

Tuesday 21 April 2020 20:50 (10 minutes)

Since April 2019, the data taking phase of the completed Belle II detector at
SuperKEKB has started. The high beam currents and the nanobeam scheme
of SuperKEKB demand an efficient first level trigger system to reject the dominant background from outside
of the interaction region before being filtered further by
accurate, but more time-consuming software algorithms. The Neural z vertex trigger, implemented in hardware, uses a three layer MLP neural network to estimate the z vertices of the tracks in an event within the
latency of the first trigger level. It is the first of its kind and allow relaxing the track trigger conditions for
interesting physics events with low track multiplicity. After the concept was
sucessfully tested in software simulations, it was deployed in the
trigger system of the detector before the winter shutdown in 2019.
We will give an insight into extensive efficiency studies of our trigger subsystem and our efforts of optimizing
the performance resulting in an increased trigger
efficiency of low multiplicity events.

Consider for young scientist forum (Student or postdoc speaker)

Yes

Second most appropriate track (if necessary)

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Session Classification: Recording sessions