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## Charged Particle Tracking with Machine Learning on FPGAs

Triggers at high luminosity colliders play an important role in ensuring high sensitivity to new physics and signatures while keeping the data storage requirements at acceptable levels. This will be especially crucial in the next runs of the LHC and at the HL-LHC. Rather than simply imposing stricter  $p_T$  or isolation requirements to keep trigger rates low, we explore the use of tracking requirements at trigger level. We present a NN based approach in identifying hits coming from a track. In this bottom-up, the complexity and input information are minimized to allow the NN to be implemented on a FPGA. This hardware based approach allows for increased data throughput, shorter latency and, crucially, flexibility to improve the algorithm in the future. In particular two subsequent NNs will be presented, one that performs extrapolation of hits based on triplet seeds and one that given the hit coordinates classifies them as coming from a real track and is used to reduce the number of fake tracks reconstructed by the first step.

### Consider for young scientist forum (Student or postdoc speaker)

No

**Authors:** GEKOW, Alex (Ohio State University (US)); BOVEIA, Antonio (Ohio State University); ABIDI, Haider (Brookhaven National Laboratory (US)); CAVALIERE, Viviana (Brookhaven National Lab); KALDERON, William (Brookhaven National Laboratory (US))

**Presenter:** ABIDI, Haider (Brookhaven National Laboratory (US))

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