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# The design of a fast Level 1 track trigger for the ATLAS High Luminosity Upgrade

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The ATLAS experiment at the high-luminosity LHC will face a five-fold
increase in the number of interactions per collision relative to the ongoing
Run 2. This will require a proportional improvement in rejection power at
the earliest levels of the detector trigger system, while preserving good signal efficiency.

One critical aspect of this improvement will be the implementation of
precise track reconstruction, through which sharper turn-on curves,
b-tagging and tau-tagging techniques can in principle be implemented. The challenge of such a project comes
in the development of a fast, precise custom electronic device integrated in the hardware-based first trigger
level of the experiment, with repercussions propagating as far as the detector read-out philosophy.

This talk will
discuss the projected performance of the system in terms of tracking, timing
and physics.

## Tertiary Keyword (Optional)

Data processing workflows and frameworks/pipelines

## Secondary Keyword (Optional)

Reconstruction

## Primary Keyword (Mandatory)

Trigger

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**Session Classification:**   Track 1: Online Computing

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