Balaji V Sathia Narayanan
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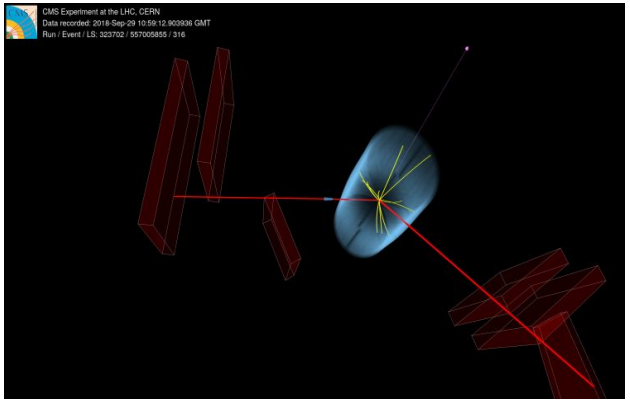

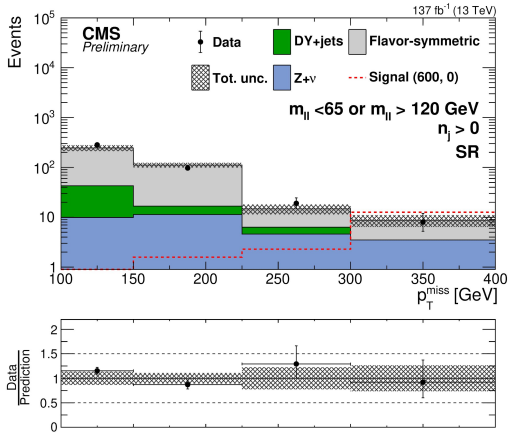

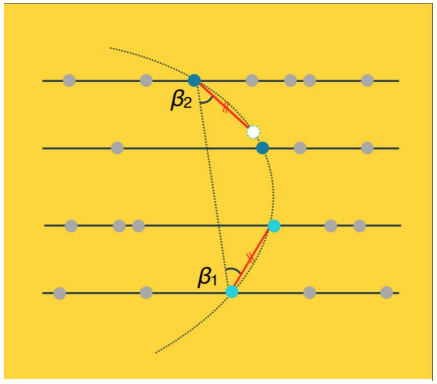

I do research in experimental high energy physics

Part of the CMS Collaboration at the LHC (CERN). Hunting for new physics (supersymmetry) beyond the standard model. We analyze data collected (PB scale) over the second run (2016-18) of the LHC, with the aid of Machine Learning, among other things.

In addition, I'm involved in developing software to improve particle tracking for the next generation of the LHC (starts in 2027), for which I develop code that runs on GPUs (CUDA).

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- LHC produces a lot of data, and no new physics has been found beyond the standard model yet!
  - Needle in a haystack - progressively difficult with more and more data
- Next generation (Phase 2 : 2027-2040s) : more simultaneous collisions every 25 ns (200, compared to 40 today) - more particles to be tracked for every collision event, need massive parallelization and incredible speed using GPUs and FPGAs

What I hope to achieve

- Overview of different techniques used in data analysis (ML, visualization etc)
- Overview of parallelization techniques (especially GPUs and CUDA)