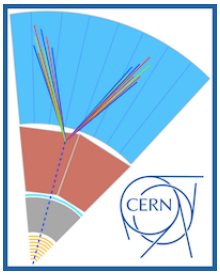

Contribution ID: **11** Type: **not specified**

SHIFT: Shifted Interaction on a Fixed Target

Tuesday, 3 June 2025 16:10 (17 minutes)

SHIFT is a proposed extension of the LHC research program by installing a gaseous fixed target ≈150 meters upstream of CMS, delivering collisions at the center of mass energy of ≈115 GeV. The particles produced in such collisions, or their decay products, travel through the rock and other material on their path, potentially reaching the CMS detector where they can be registered and studied.

Preliminary studies show that SHIFT improves CMS sensitivity to new particle couplings by 2–3 orders of magnitude by maximizing decay volume and acceptance while using intervening material as shielding that does not affect weakly interacting LLPs or muons they decay to. Compared to other projects like SHiP, FASER, CODEX-b, and MATHUSLA, SHIFT achieves unique sensitivity at a fraction of the cost by using an existing detector.

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