The Heavy Flavor Tracker extends STAR’s physics reach into the heavy flavor sector, requiring precise simulations accounting for the many misalignments of sensitive volumes in the geometry.

Hit moving strategies, successful at the mm-scale of hit resolution, do not work as we move to μm-scale precision detectors.

The STAR geometry model is described by an Abstract Geometry Modeling Language: AgML [1]

We have extended the AgML syntax and software libraries to provide support for misalignments, beyond hit moving already implemented in STAR
- Syntax to represent the misalignment of physical volumes
- Interface associating misalignment parameters stored in the STAR database to physical volumes
- Support for misaligning groups of physical volumes with the same misalignment parameters

HFT experimental alignment procedure used to extract misalignments applied to pixel detector in simulated cosmic rays, demonstrating a path forward for precision simulations with the full HFT.