



# New Geometry Access for Auxiliary Detectors

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# Need for Another Geometry Provider



- LArIAT is the first experiment to use auxiliary detectors extensively for data taking
- Some of these detectors have a single readout channel per sensitive volume, some have multiple readout channels
- Need a provider of the geometry that is flexible enough to handle these different detectors
- Also want to minimize the impact of auxiliary detectors on experiments that do not use them
- Created new set of objects that handle the auxiliary detector geometry interface exclusively
- New objects are analogs for all the objects developed for detectors in cryostats: `AuxDetGeometry`, `AuxDetGeometryCore`, `AuxDetExptGeoInterface`, `AuxDetChannelMapAlg`, `AuxDetGeoObjectSorter`
- Similar interface to the Geometry objects, copy some code from `GeometryCore`, etc into the new `AuxDet` objects

# Impact on LArSoft



- No currently existing interfaces change
- At some point in the future will remove code that is duplicated in Geometry\* objects
- Experiments wishing to use these objects will need to make specific versions of AuxDetChannelMapAlg, AuxDetGeoObjectSorter, AuxDetGeometryHelper\_service
- Will also need to add AuxDetGeometry(Helper) to the list of services used

# Details



- The gdml file for the experiment is read by `AuxDetGeometryCore` for `AuxDet` volumes and sensitive volumes if the `gGeoManager` pointer has not yet be set
- Otherwise it just grabs the `gGeoManager` pointer to look for `AuxDet` related volumes
- If the `Geometry` service is instantiated after the `AuxDetGeometry` service, the gdml file may be read twice, but that is not a huge time cost
- Users wanting to know the geometric description of the auxiliary detectors would need to grab the `art::ServiceHandle<geo::AuxDetGeometry>` service handle
- Code currently lives in the LArIAT repository, but will be moved into `larcore` after the idea is approved