

Proposed changes to geometry and more

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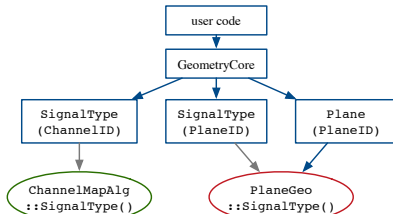
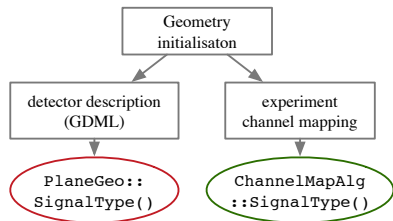


- 1 Deprecation of `geo::PlaneGeo::SignalType`
- 2 Removal of `TriggerAlgoMicroBoone`
- 3 Removal of `lar::utils` namespace

Wire plane objects (`geo::PlaneGeo`) and signal type

The `SignalType` describes whether the signal on a channel is `kInduction` or `kCollection`.

- it is delivered to the user via `GeometryCore::SignalType()`
- it is determined by experiment's channel mapping
- ... but also directly by an assuming geometry ("last plane is collection, the others are induction")
- this information is redundant
- the heuristic used by geometry is **flawed for dual phase detectors**



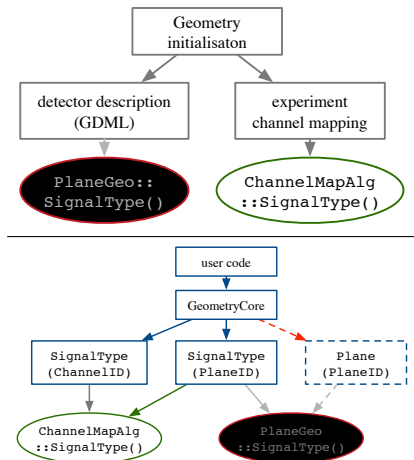
Reference: [LArSoft issue #14365](#).

Removing the redundancy

The proposed change:

- rely only on experiment channel mapping
- **remove redundant**
`PlaneGeo::SignalType()`
- change internal implementation of
`GeometryCore::SignalType(PlaneID)`

This is a minor breaking change.



Fix plan

- the **breaking change** consists in replacing this type of query:

```
geo::PlaneGeo const& plane = geom->Plane(planeID);  
auto signalType = plane.SignalType();
```

with the following one (which is already valid):

```
auto signalType = geom->SignalType(planeID);
```

- LArSoft and experiment code will be updated *immediately* in develop branch
- the interface to the redundant `geo::PlaneGeo` will be **deprecated** *with the next release*
- it will be removed in one month from now

New feature

In addition, `geo::PlaneGeo::ID()` will **return the ID of that plane.**

In short:

- `TriggerAlgoMicroBoone` is a class in `larsim`
- it is gaudily detector specific
- it is, also, not used in any LArSoft (nor `uboonecode`) code
- **proposing to nuke it and be done with it**

Reference: [LArSoft issue #5251](#).

Removal of `lar::utils` namespace

In short:

- LArSoft exposes the two namespaces `lar::util` and `lar::utils`
- since 3 months, the latter has been deprecated
- at that time, `lar::util` started hosting `lar::utils` functions, and the latter hosted just (deprecated) aliases
- code (LArSoft + experiments) was updated
- no report received about problems related to this change
- **cleaning time: we are going to remove `lar::utils` for good**

Reference: [LArSoft issue #12367](#).

Backup

- I am **adding an ID object** to each of `CryostatGeo`, `TPCGeo` and `PlaneGeo` (note that a e.g. a `PlaneGeo` does not know which `TPCGeo` it belongs to)
- initialisation of these IDs happens with a post-processing step after sorting the geometry elements
- wire objects (`WireGeo`) are excluded for fear of the impact on resources (a wire ID is currently 20 bytes, and a detector can have several 100k of them).

This might change in the future.

With this addition, another way to solve:

```
for (geo::PlaneGeo const& plane: geom->IteratePlanes()) {  
    auto signalType = plane.SignalType(); // ...  
}
```

when forced to go via a `geo::PlaneGeo` will be:

```
for (geo::PlaneGeo const& plane: geom->IteratePlanes()) {  
    auto signalType = geom->SignalType(plane.ID()); // ...  
}
```

This is *not* valid in current (`v06_13_01`) LArSoft.