LArSoft - Task #15688

Milestone # 15086 (Closed): Onboard ICARUS

Extend wire sorting to accommodate wires parallel to z direction

02/28/2017 12:46 PM - Gianluca Petrillo

Status:	Closed		**Start date:**	02/28/2017
Priority:	Normal		**Due date:**	
Assignee:	Gianluca Petrillo		**% Done:**	100%
Category:	Geometry		**Estimated time:**	0.00 hour
Target version:			**Spent time:**	2.00 hours

Description

(submitted on behalf of Wesley Ketchum)

As in ICARUS use case, the standard wire sorter in larcore:source:larcore/Geometry/GeoObjectSorterStandard.cxx fails to sort wires that have centres with the same *z*.

A backward compatible solution can be added to support ICARUS case, where wires are aligned with *z* and lie on a vertical plane.

History

#1 - 02/28/2017 12:48 PM - Gianluca Petrillo

- Assignee set to Wesley Ketchum

The extension should also include the use case of ProtoDUNE, where wires have all the same *y* coordinate (lie on a horizontal plane) and some can be aligned to *z* axis as well.

#2 - 02/28/2017 12:48 PM - Gianluca Petrillo

- Status changed from New to Assigned

#3 - 03/01/2017 06:55 AM - Wesley Ketchum

- Status changed from Assigned to Work in progress

- Assignee changed from Wesley Ketchum to Gianluca Petrillo

- % Done changed from 0 to 40

OK, sorting code on feature/wketchum_SortingUpdate. I haven't tried to build or test lest I interrupt my environment: gonna kick back to Gianluca for that.

#4 - 03/01/2017 01:49 PM - Gianluca Petrillo

I have run a wire dump[1] of the "reference" geometry in larcore, on MicroBooNE's, DUNE 35t, DUNE Far Detector, ArgoNeuT and LArIAT geometries, before and after the patch.
The test has succeeded, as no difference has been observed.
A minor concern is that the test for equality vs. std::numeric_limits<double>::epsilon() might miss rounding errors. We could consider using physically meaningful thresholds instead (like 0.0001 centimetres, i.e. 1 micron).

[1] That is one of the "tests" of the standard geometry test suite. The configuration I used is along the lines of

```
#include "test_geometry.fcl"
```

```
physics.analyzers.geotest.RunTests: [ "-*", "+PrintWires" ]
```

#5 - 03/02/2017 02:26 PM - Katherine Lato

- Tracker changed from Feature to Task

- Parent task set to #15086

Making this a task under 'Onboarding ICARUS' milestone.

#6 - 07/03/2017 03:55 PM - Gianluca Petrillo

- % Done changed from 40 to 100

Respect to the original code, I have changed the check for "equality" of coordinates to use a physical tolerance (currently 10 um, which I am not sure it makes *real* sense but at least it works pretty well).

The change has been tested on all geometries except LArIAT/ArgoNeuT and Icarus, verifying that wire order has not changed.
Therefore, the change is not breaking.

The code is in feature/wketchum_SortingUpdate of larcore, updated to LArSoft v06_41_00 and ready for merge.

#7 - 07/03/2017 03:56 PM - Gianluca Petrillo

- Status changed from Work in progress to Resolved

#8 - 07/26/2017 04:14 PM - Gianluca Petrillo

- Status changed from Resolved to Closed