

Welcome to LArSoft tutorial!

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Scope:

- Today we would like to show how to make first steps in LArSoft and work on liquid argon data.
- If you continue: unavoidably you will become a code developer.
- Hope you will enjoy and profit from information shown today.

Why do we use LArSoft ?

- Open to everyone, contributions from a broad liquid argon community: ArgonNeuT, LArIAT, MicroBooNE, SBND, 35t, ProtoDUNEs, DUNE...
- *This is an experiment in software organization since it is unusual for people to share detector simulation or reconstruction codes between collaborations Tom Junk.*

What are we going to do today?

- Introduction to LArTPC technology, data simulation, reconstruction and data analysis in LArSoft.
- Plan for hands-on sessions:
 - Create our development area and compile.
 - Run simulation/reconstruction chain.
 - See the event in the event display.
 - Run simple analysis using *gallery*.
 - Write *LArSoft* module.

Some organizational issues before you start

- CERN account.
- Access to Neutrino Computing Cluster.
- Data storage at CERN.

Theo's talk

- **To be able to commit and push your changes to repository you will need to create your Fermilab account. So don't wait too much!**
- **If you are ProtoDUNE/DUNE scientist, please visit the page of Young DUNE tutorial:**
<https://indico.fnal.gov/conferenceTimeTable.py?confId=12889#20160916>
- **After this tutorial you may want to explore material from a bigger LArSoft tutorial at Fermilab:**
<http://larsoft.org/larsoft-workshop-report-august-2016>

To setup the developed area in Neutrino Cluster you can do:

```
ssh <username>@neut.cern.ch
source /cvmfs/dune.opensciencegrid.org/products/dune/setup_dune.sh
source /cvmfs/fermilab.opensciencegrid.org/products/larsoft/setup
setup mrb
export MRB_PROJECT=larsoft
cd /mnt/nas00/users/<username>
setup larsoft v6_13_00 -q e10:prof
source localProducts_XXXX/setup
cd srcs
mrb g dunetpc
cd $MRB_BUILDDIR
mrbsetenv
mrb i -j4
mrbslp
```

**Thanks to
Theodoros we have
now a script which
will do all this stuff
for us!**

To setup the developed area in Fermilab, please follow the link:

<https://indico.fnal.gov/getFile.py/access?contribId=0&resId=0&materialId=paper&confId=12889>

Sample of data from Monte Carlo Challenge (MCC) are stored in:

```
/mnt/nas00/software/protoDUNE_June_ws/newsamples/:
```

```
gen_protoDune_electron_2GeV_mono  
electron 2GeV, ProtoDUNE-SP
```

```
gen_protoDune_pion_2GeV_mono  
pi 2GeV, ProtoDUNE-SP
```

```
prod_piminus_2.0GeV_isotropic_dune10kt_dphase  
pi 2GeV, FD workspace-DP
```