PFLOTRAN installation instructions on LBL Lawrencium cluster

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Step 1: Load shared modules

```
module load gcc/4.8.5
module load lapack
module load openmpi
module load hdf5/1.8.18-gcc-p
```

Check that correct modules are loaded:

```
module list
```

The gcc and hdf5 versions should appear as above. Lapack and openmpi should be versions 3.8.0-gcc and 2.0.2-gcc, respectively.

Step 2: Clone PETSc

```
git clone https://gitlab.com/petsc/petsc.git petsc
cd petsc
git checkout v3.17.1
```

Step 3: Configure and make PETSc

This line must be run from the petsc dir.

```
./configure --with-debugging=no --with-batch --with-shared-
libraries=yes --known-mpi-shared-libraries=1 --with-mpi-
dir=/global/software/sl-7.x86_64/modules/gcc/4.8.5/openmpi/2.0.2-gcc/ --
known-64-bit-blas-indices --with-hdf5-dir=/global/software/sl-
7.x86_64/modules/gcc/4.8.5/hdf5/1.8.18-gcc-p/ --download-hdf5-fortran-
bindings=yes
```

After the configuration is complete, it will prompt you to make PETSc and provide a command for doing so. If PETSc compiles, it will prompt you test the compilation, and provide a command to do so.

Check that PETSC_DIR and PETSC_ARCH are defined:

```
echo $PETSC_DIR
echo $PETSC_ARCH
```

Step 4: Clone PFLOTRAN

From $HOME, make a new directory for PFLOTRAN. Enter the directory and clone PFLOTRAN

```
git clone https://gitlab.com/pflotran/pflotran.git
```

Step 5: Make PFLOTRAN

```
cd pflotran/src/pflotran
git checkout maint/v4.0
make pflotran
```

This will take ~10 min.