

## Gromacs 2021.4 Intel20 with GPU support

### Webpage

<http://www.gromacs.org/>

### Version

2021.4

### Build Environment

- Intel Parallel Studio 2020 update 2
- cuda 11.1
- GCC 9.3.1 (Software Collections devtoolset-9)
- cmake 3.16.3

### Files Required

- gromacs-2021.4.tar.gz
- regressiontests-2021.4.tar.gz

### Build Procedure

```
#!/bin/sh

VERSION=2021.4
INSTALL_PREFIX=/local/apl/lx/gromacs${VERSION}-intel-CUDA

BASEDIR=/home/users/${USER}/Software/Gromacs/${VERSION}/
GROMACS_TARBALL=${BASEDIR}/gromacs-${VERSION}.tar.gz
REGRESSION_TARBALL=${BASEDIR}/regressiontests-${VERSION}.tar.gz
WORKDIR=/work/users/${USER}
REGRESSION_PATH=${WORKDIR}/regressiontests-${VERSION}

PARALLEL=12
export LANG=C

#-----
umask 0022

module purge
module load scl/devtoolset-9
module load intel_parallelstudio/2020update2
module load cuda/11.1
module load cmake/3.16.3

cd ${WORKDIR}
if [ -d gromacs-${VERSION} ]; then
  mv gromacs-${VERSION} gromacs_erase
  rm -rf gromacs_erase &
fi

if [ -d regressiontests-${VERSION} ]; then
  mv regressiontests-${VERSION} regressiontests_erase
  rm -rf regressiontests_erase &
fi

tar xzf ${GROMACS_TARBALL}
tar xzf ${REGRESSION_TARBALL}
cd gromacs-${VERSION}

# single precision, no MPI
mkdir rccs-s
cd rccs-s
```

```
cmake .. \  
-DCMAKE_INSTALL_PREFIX=${INSTALL_PREFIX} \  
-DCMAKE_VERBOSE_MAKEFILE=ON \  
-DCMAKE_C_COMPILER=icc \  
-DCMAKE_CXX_COMPILER=icpc \  
-DGMX_MPI=OFF \  
-DGMX_GPU=CUDA \  
-DGMX_DOUBLE=OFF \  
-DGMX_THREAD_MPI=ON \  
-DGMX_BUILD_OWN_FFTW=ON \  
-DREGRESSIONTEST_DOWNLOAD=OFF \  
-DREGRESSIONTEST_PATH=${REGRESSION_PATH}  
make -j${PARALLEL} && make check && make install  
cd ..  
  
# single precision, with MPI  
mkdir rccs-mpi-s  
cd rccs-mpi-s  
cmake .. \  
-DCMAKE_INSTALL_PREFIX=${INSTALL_PREFIX} \  
-DCMAKE_VERBOSE_MAKEFILE=ON \  
-DCMAKE_C_COMPILER=mpiicc \  
-DCMAKE_CXX_COMPILER=mpiicpc \  
-DGMX_MPI=ON \  
-DGMX_GPU=CUDA \  
-DGMX_DOUBLE=OFF \  
-DGMX_THREAD_MPI=OFF \  
-DGMX_BUILD_OWN_FFTW=ON \  
-DREGRESSIONTEST_DOWNLOAD=OFF \  
-DREGRESSIONTEST_PATH=${REGRESSION_PATH}  
make -j${PARALLEL} && make check && make install  
cd ..
```

## Notes

- Exactly the same procedure as [the case of 2021.2](#).