

## Molpro 2022.2.2

### Webpage

<https://www.molpro.net/>

### Version

2022.2.2 (latest commit: 2022/6/8 11:34:24 +0200)

### Build Environment

- GCC 9.3.1 (devtoolset-9)
- Intel Parallel Studio 2018 update4 (mkl and mpi)
- Global Arrays Toolkit 5.8

### Files Required

- Molpro\_release.tar.gz (downloaded Molpro\_release was tar-gzipped)
- ga-5.8.tar.gz
- Patches [used for the previous time \(version 2021.3.1\)](#)
  - work.patch
    - file path modified.
  - patch-argos-bininput.F
  - patch-cic-ItfFortranInt.h
  - patch-common\_modules-common\_cconf1
  - patch-mpp-ga\_impl\_select
  - patch-common\_modules-common\_cftypes
  - patch-util-iom
  - patch-util-iow
  - secure\_snprintf.patch
- patch-geometry-geometry-evaluation
  - the same reason as patch-util-iom and patch-util-iow patches
- token

### Build Procedure

```
#!/bin/sh

GA_VERSION=5.8
GA_ARCHIVE=/home/users/${USER}/Software/GlobalArrays/${GA_VERSION}/ga-${GA_VERSION}.zip

MOLPRO_VERSION=2022.2.2
MOLPRO_DIRNAME=Molpro_release
PARALLEL=12
BASEDIR=/home/users/${USER}/Software/Molpro/${MOLPRO_VERSION}
MOLPRO_TARBALL=${BASEDIR}/${MOLPRO_DIRNAME}.tar.gz

PATCH_SNPRINTF=${BASEDIR}/secure_snprintf.patch
PATCH0=${BASEDIR}/work.patch
PATCH1=${BASEDIR}/patch-argos-bininput.F
PATCH2=${BASEDIR}/patch-cic-ItfFortranInt.h
PATCH3=${BASEDIR}/patch-common_modules-common_cconf1
PATCHX=${BASEDIR}/patch-mpp-ga_impl_select

PATCH10=${BASEDIR}/patch-common_modules-common_cftypes
PATCH11=${BASEDIR}/patch-util-iom
PATCH12=${BASEDIR}/patch-util-iow
PATCH13=${BASEDIR}/patch-geometry-geometry-evaluation

TOKEN=${BASEDIR}/token

WORKDIR=/work/users/${USER}
GA_INSTALLDIR=${WORKDIR}/ga-temporary
```

```
INSTALLDIR=/local/apl/lx/molpro${MOLPRO_VERSION}
```

```
#-----
```

```
umask 0022
```

```
ulimit -s unlimited
```

```
export LANG=
```

```
export LC_ALL=C
```

```
export OMP_NUM_THREADS=1
```

```
cd $WORKDIR
```

```
if [ -d ga-${GA_VERSION} ]; then
```

```
mv ga-${GA_VERSION} ga_tmp
```

```
rm -rf ga_tmp &
```

```
fi
```

```
if [ -d ga-temporary ]; then
```

```
mv ga-temporary ga_tmp_tmp
```

```
rm -rf ga_tmp_tmp &
```

```
fi
```

```
if [ -d ${MOLPRO_DIRNAME} ]; then
```

```
mv ${MOLPRO_DIRNAME} molpro_tmp
```

```
rm -rf molpro_tmp &
```

```
fi
```

```
module purge
```

```
module load scl/devtoolset-9
```

```
module load mk/2018.0.4
```

```
module load mpi/intelmpi/2018.4.274
```

```
module load cmake/3.16.3
```

```
unzip -q ${GA_ARCHIVE}
```

```
#tar xzf ${GA_ARCHIVE}
```

```
cd ga-${GA_VERSION}
```

```
export CFLAGS="-mpc80"
```

```
export FFLAGS="-mpc80"
```

```
export FCFLAGS="-mpc80"
```

```
export CXXFLAGS="-mpc80"
```

```
export F77=mpif90
```

```
export F90=mpif90
```

```
export FC=mpif90
```

```
export CC=mpicc
```

```
export CXX=mpicxx
```

```
export MPIF77=mpif90
```

```
export MPICC=mpicc
```

```
export MPICXX=mpicxx
```

```
export GA_FOPT="-O3"
```

```
export GA_COPT="-O3"
```

```
export GA_CXXOPT="-O3"
```

```
# --with-ofi failed...
```

```
./autogen.sh
```

```
cp -f $PATCH_SNPRINTF autotools/m4-1.4.17/
```

```
cd $WORKDIR/ga-${GA_VERSION}
```

```
./autogen.sh
```

```
./configure --enable-i8 \
```

```
    --with-mpi3 \
```

```
    --prefix=${GA_INSTALLDIR}
```

```
make -j ${PARALLEL}
```

```
make check
```

```
make install
```

```
cp config.log ${GA_INSTALLDIR}
```

```

cd ../
tar zxf ${MOLPRO_TARBALL}
cd ${MOLPRO_DIRNAME}

patch -p0 < ${PATCH0}
patch -p0 < ${PATCH1}
patch -p0 < ${PATCH2}
patch -p0 < ${PATCH3}
patch -p0 < ${PATCHX}

patch -p0 < ${PATCH10}
patch -p0 < ${PATCH11}
patch -p0 < ${PATCH12}
patch -p0 < ${PATCH13}

export PATH="${GA_INSTALLDIR}/bin:$PATH" # where ga-config exists

CPPFLAGS="-I${GA_INSTALLDIR}/include" \
LDLDFLAGS="-L${GA_INSTALLDIR}/lib" \
./configure --prefix=${INSTALLDIR}

sed -i -e "s/^VERBOSE.*$/VERBOSE=/" CONFIG

make -j ${PARALLEL}
cp $TOKEN lib/.token

make tuning

MOLPRO_OPTIONS="" make quicktest
MOLPRO_OPTIONS=-n2 make test

# failed tests: o3_optdfpbe0 (slater ignored)

#make install # do it manually
#cp -a testjobs ${INSTALLDIR}/molpro*/
#cp -a bench ${INSTALLDIR}/molpro*/

```

## Notes

- (Used patch files are copied to /local/apl/lx/molpro2022.2.2/patches directories)
- The build procedure and patch files are basically the same as [the previous build \(2021.3.1\)](#). Slater is not tested this time.
- Only the o3\_optdfpbe0.test was failed. Required accuracy is too high?

```

**** PROBLEMS WITH JOB o3_optdfpbe0.test
ERRORS DETECTED in o3_optdfpbe0.test. Max error for energy=3.67742814D-09
**** For further information, look in the output file

```