

## Amber18-bf11 (Volta)

### Webpage

<http://ambermd.org/>

### Version

Amber 18-bf11 + AmberTools 18-bf12

### Build Environment

- Intel Compiler 17.0.8
- Intel MKL 2017 update 4
- Intel MPI 2017.0.4
- CUDA 9.1.85
- Python 2.7

### Files Required

- Amber18.tar.bz2
- AmberTools18.tar.bz2
- (Amber18 update.1-11; get in the procedure below)
- (AmberTools18 update.1-12; get in the procedure below)

### Build Procedure

```
#!/bin/sh

VERSION=18
TOOLSVERSION=18

INSTALL_DIR="/local/apl/lx/amber18-bf11v"
TARBALL_DIR="/home/users/${USER}"

PARALLEL=12

#-----
module purge
module load intel_parallelstudio/2017update8
module load cuda/9.1

export AMBERHOME=${INSTALL_DIR}
export CUDA_HOME="/local/apl/lx/cuda-9.1"

export LANG=C
export LC_ALL=C

# install directory has to be prepared before running this script
if [ ! -d $AMBERHOME ]; then
    echo "Create $AMBERHOME before running this script."
    exit 1
fi

# the install directory must be empty
if [ "$(ls -A $AMBERHOME)" ]; then
    echo "Target directory $AMBERHOME not empty"
    exit 2
fi

ulimit -s unlimited

# prep files
cd $AMBERHOME
```

```

bunzip2 -c ${TARBALL_DIR}/Amber${VERSION}.tar.bz2 | tar xf -
bunzip2 -c ${TARBALL_DIR}/AmberTools${TOOLSVERSION}.tar.bz2 | tar xf -

mv amber${VERSION}/* .
rmdir amber${VERSION}

# apply patches if exists
./update_amber --update
# configure python separately (miniconda)
AmberTools/src/configure_python
$AMBERHOME/bin/amber.conda install mkl-rt --yes

echo "[GPU serial edition (three versions)]"
./configure --no-updates -volta -cuda gnu
make -j${PARALLEL} install && make clean

echo "[GPU parallel edition (three versions)]"
./configure --no-updates -volta -mpi -cuda gnu
make -j${PARALLEL} install && make clean
# tests of GPU versions will be done elsewhere

echo "[CPU serial edition]"
LANG=C ./configure --no-updates -mkl intel
make -j${PARALLEL} install
. ${AMBERHOME}/amber.sh
make test.serial
make clean

echo "[CPU openmp edition]"
LANG=C ./configure --no-updates -openmp -mkl intel
make -j${PARALLEL} install
make test.openmp
make clean

echo "[CPU parallel edition]"
LANG=C ./configure --no-updates -intelmpi -mkl intel
make -j${PARALLEL} install
export DO_PARALLEL="mpirun -np 2"
make test.parallel
export DO_PARALLEL="mpirun -np 4"
cd test && make test.parallel.4proc

cd $AMBERHOME
make clean && chmod 700 src

```

## Notes

- GPU versions are specific to GPGPU cards of "Volta" generation (e.g. V100). They won't work on Pascal cards (e.g. P100).
- Corresponding module name is "amber/18/bugfix11-volta".
- Files are installed under /local/apl/lx/amber18-bf11v directory.
- Samples can be found at samples/ directory.
- Environment setting scripts (amber.sh, amber.csh) are available at /local/apl/lx/amber18-bf11v directory. CUDA-9.1 path setting should be done elsewhere, because amber scripts don't do CUDA setting.
  - Please check sample scripts in samples/ directory.
- Testlogs can be found under logs/ directory. Tests except CUDA versions were performed at one of the frontend nodes.