

# FxKernel

FxKernel is a stand alone FX correlator based on the DIFX design but with no MPI dependencies and designed for simplicity. It is not intended for production correlation, just a simple reference design and for benchmarking.

## Installation

Like DiFX, FxKernel depends on IPP, which must be installed.

FxKernel is part of the gCorr demonstration GPU cross correlator. Download from github:

```
> git clone https://github.com/XhrisPhillips/gcorr.git
> cd fxkernel
```

If you have an existing DIFX installation and `PKG_CONFIG_PATH` points to `ipp.pc`, you can skip the next step

```
./genippc
```

If IPP is not installed in `/opt/intel`, add the "INTEL" path as an argument to `genippc` or set `$IPPROOT` to point to this path.

Copy the generated `ipp.pc` file to a directory pointed to by `$PKG_CONFIG_PATH`

To build FxKernel

```
autoreconf --install
./configure
make
```

## Benchmarks

```
cd bench
./threads.sh
```

(Note, if hyperthreading is enabled, consider first editing `threads.sh` and setting max threads explicitly).

Note # threads with maximum data rate - probably when #threads equals number of real cores.

Edit `channels.sh` and set `NTHREAD` to equal best number of threads.

```
./channels.sh
```

Note # channels with maximum data rate, probably 256.

Edit antennas . sh, set NTHREAD as appropriate

```
./antenna.sh
```

Edit antennas - 16384 . sh, set NTHREAD as appropriate

```
./antenna-16384.sh
```

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