

WVURAIL / gr-radio\_astro

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This package provides GNUradio OOT modules and grc flowgraphs that fascilates Radio Astronomy Observations with software defined radio devices.

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 **kbandura**

Merge pull request #46 from WVURAIL/kbandura-patch-png-print

1112b05 · 2 months ago

🕒

apps	huge change. Working spectr...	5 years ago
cmake	huge change. Working spectr...	5 years ago
data	Fix telescope name	5 years ago
docs	Update README.md	9 months ago
examples	clean up Integrate60	4 months ago
grc	Units in Hz	4 years ago
include/gnuradio/radi...	Add python calls to C++ func...	4 years ago
lib	All frequencies in Hz	4 years ago
misc	cleanup	5 years ago
python	Update png_print_spectrum.py	2 months ago
CMakeLists.txt	fix radio_astro import in GRC ...	4 years ago
MANIFEST.md	huge change. Working spectr...	5 years ago

📖 README

# gr-radio\_astro

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This package provides GNUradio OOT modules and grc flowgraphs that facilitates Radio Astronomy Observations with software defined radio devices.

There are two flavors of this projects:

1. NSF Integrate and Detect softwares that allow for HI measurements and also event detections from cosmic ray detections, developed by Dr. Glen Langston. See [here](#) and the [lightwork memo series](#) for more details.
2. DSPIRA software developed for and by High School Teachers part of the [NSF funded RET program](#) called [Digital Signal Processing in Radio Astronomy \(DSPIRA\)](#) at WVU university from the summers of 2017 to 2021. For more details visit the [webpage](#) and the companion website called [dspira-lessons](#) that has lessons, guides and more material help one to use radio astronomy in a high school classroom. This material is designed by the High School teachers part of this program.

## Installing from Source

1. Install GNUradio
2. ii. Install gnuradio external python dependencies and SDR drivers by typing the following and hit enter:

```
sudo apt install gnuradio gr-osmosdr airspy python3-h5py python3-ephem
git cmake liborc-0.4-dev -y
```



3. To clone the repository:

```
git clone https://github.com/WVURAIL/gr-radio_astro.git
```



4. Switch to the gr-radio\_astro directory: `cd gr-radio_astro`
5. Make a build directory: `mkdir build`, and then move to it: `cd build`
6. Then run the following in the build directory:

```
cmake ..
sudo make
sudo make install
```



### Additional Steps for setting the proper Python environment:

8. Edit your `.bashrc` file and add this to the bottom to set Python path: `export PYTHONPATH=/usr/local/lib/python3/dist-packages:/usr/local/lib/python3.10/dist-packages:$PYTHONPATH`
9. Additionally you can create appropriate symbolic links
  - i. Check which python is the installed version of GNURadio by opening `gnuradio-companion` in a terminal window and click on `Help --> About` and noting the python version on the dialog box that opens.

- ii. Go to the following by typing: `cd /usr/local/lib/python3.10/dist-packages` or `cd /usr/local/lib/python3.9/dist-packages` for the appropriate python version.
- iii. Type `ln -s /usr/local/lib/python3/dist-packages/radio_astro`

## Running from a bootable USB Flash Drive with preinstalled software:

[Instructions to set up a persistant USB flash with preinstalled software drive are here](#)

TODO: Update for 3.10 below the instructions are for 3.8

## Installing on a Raspberry Pi.

### Supported Raspberry Pi Devices

*All devices must have RAM greater than 4GB*


1. Raspberry Pi 4 Model B
2. Raspberry Pi 400

### Installing Ubuntu image with radio astronomy preinstalled on a Raspberry Pi

This image requires a minimum of 16GB of space on the SD card.

1. Download the image [here](#)
2. Unzip the `.zip` file.
3. Use [Raspberry Pi Imager](#) to install this image.
  - i. Insert SD card into your card reader on your computer
  - ii. Open Raspberry Pi imager.
  - iii. Click `Choose OS`, and choose `Use Custom`.
  - iv. Select the correct image file downloaded in step 1 and 2 from your system.
  - v. Click `Choose storage` and select your inserted SD card.
  - vi. Click write.
  - vii. More info [here](#) and a [video](#)
4. Insert SD card to Raspberry Pi and power it up.
5. The default user name is `pi`, with password `raspberry`. Change the password after first boot.

Releases 5

 **v2024.12-gr310** Latest

on Dec 31, 2024

+ 4 releases

Packages

No packages published

Contributors 8



Languages

