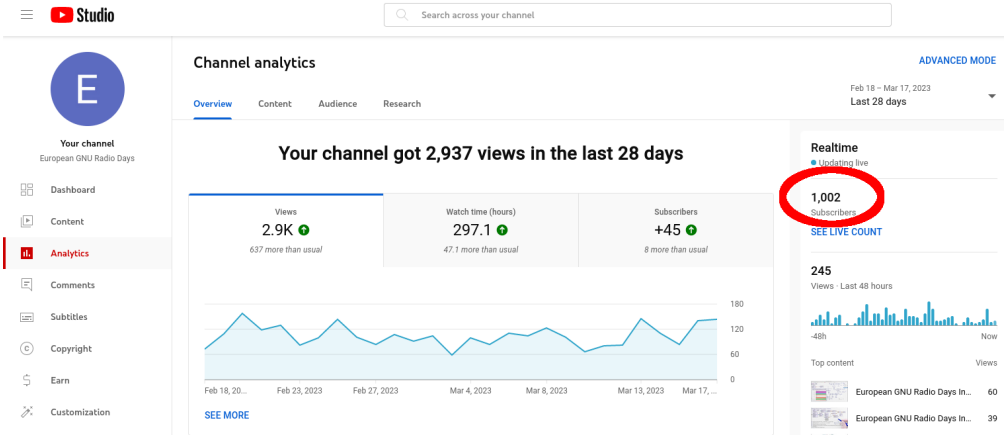
European GNU Radio Days 2023: welcome

- 1.5 days aimed at fostering collaboration between academia, hackers, industry, government agencies using Software Defined Radio and its free, opensource implementation GNU Radio
- started in 2018 in Lyon as French GNU Radio Days [1]
- 2019 in Besançon (85 participants), ~~2020 in Poitiers~~, 2021 virtual with the German Software Defined Radio Academy (SDRA) focusing on tutorials, 2022 with SDRA in Friedrichshafen (on site + virtual)...
- ... 2023: no SDR at FOSDEM this year, so worth trying to expand the workshop between organizers to a broader audience ... 70-participant limit reached!
- location: Paris for ease of transportation and accomodation, thanks to Yann LeCoq and the SYRTE/Paris Observatory for their support in hosting the event

[1] `https://gnuradio-fr-18.sciencesconf.org/` with "French" meant to refer to the location and not the language !

European GNU Radio Days: YouTube

- `https://www.youtube.com/@europeangnuradiodays1445/`
- Supporting training material as well as research topics
- Reached the thousandth subscriber last week
- Mostly in English, but some teaching material in French to answer requests from non-English speaking audience (e.g. sub-Saharan Africa)



European GNU Radio Days 2023: program

Wednesday, March 29, 2023

09:15	09:30	Welcome/organization
09:30	10:00	Multiheterodyne spectroscopy of Eu^{3+}:Y_2SiO_5 based on GNU Radio (Xiuji Lin)
10:00	10:30	Header correlation and tags (Thomas Lavarenne)
10:30	11:15	**Coffee break** + demonstrations
11:30	12:00	Design and realization of a GNU Radio based Visible Light Communication testbed (Maugan De Murcia)
12:00	12:30	USRP time synchronisation with Octoclocks for distributed nodes, practical implementation (Cyrille Morin)
12:30	14:00	**Lunch**
14:00	14:45	M17 implementation with GNU Radio (Wojciech Kaczmarski)
14:45	15:30	From a simulated to a real digital communication system: effective usage of GNU Radio synchronization blocks (Hervé Boeglen)
15:30	16:15	**Coffee break** + demonstrations
16:30	17:00	SARSAT (Marcus Müller)
17:00	17:30	Synchronization between a Vertical Incidence Pulsed Ionospheric Radar and an Ionospheric Echoes Receiver (Isaac Mario Tupac Davila – virtual)
17:30	18:00	Progress in reverse engineering the SATRE Two-Way Satellite Time Transfer modem digital communication layer (Jean-Michel Friedt)

Thursday, March 30, 2023

09:00	09:30	Welcome
09:30	10:15	An opensource framework for prototyping Two Way Satellite Time and Frequency Transfer using Software Defined Radio (Jean-Michel Friedt)
10:15	11:00	Hacking USRP gateware (Gwenhael Goavec-Merou)
11:00	11:45	Synchronization and Deep Learning: experiences learned from dataset creation (Leornardo Cardoso)
11:45	12:30	Synchronization for interferometry through White Rabbit (Paul Boven)
12:30	14:00	**Lunch**
14:30	17:30	SYRTE/Paris Observatory visit: **bring your ID** and **register which track you wish to follow**

European GNU Radio Days 2023: SYRTE laboratory visit

Track1:
Optical frequencies

Next genertation atomic clocks

- optical, strontium, mercury
- optical frequency combs to links with microwaves
- ultrastable lasers
- REFIMEVE for long range ultrastable signal distribution

Track2:
Microwave clocks and time references

- atomic fountain (primary frequency reference)
- time generation (legal French time)
- compact atomic clocks

Track3:
Inertial sensors

- matter wave gradiometers
- chip scale Matter wave gyroscope
- matter wave gravitational wave detector (MIGA project)

Sort your selections amongst the three tracks and we will try to arrange best which experiments to visit

European GNU Radio Days 2023: organizing committee

- Hervé Boeglen: associate professor at Poitiers University, researcher at XLim laboratory
- Thomas Lavarenne: teacher at Lycée Jean Rostand (Paris)
- Leonardo Cardoso: associate professor at INSA Lyon, researcher at CITI INRIA laboratory
- Cyrille Morin: research engineer at CITI INRIA laboratory
- Gwenhael Goavec-Merou: research engineer at FEMTO-ST (Besançon)
- Yann Le Coq: senior researcher at SYRTE/Paris Observatory
- Jean-Michel Friedt: associate professor at Franche-Comté University, researcher at FEMTO-ST

strong **teaching** and **academia** orientation of the use of GNU Radio

$\Rightarrow$ different perspectives would be welcome despite the multiple challenges of teaching SDR (signal processing, mathematics, software engineering, operating system ...) and the **benefits brought by GNU Radio**

Don't panic