



1222·2022
800
ANNI



UNIVERSITÀ
DEGLI STUDI
DI PADOVA

**PhD course of National Interest in Technologies for
Fundamental Research in Physics and Astrophysics**

Annual report

Name and surname: Maida Anwar
Cycle and a.a.: 39th cycle /2023-2024
Supervisor: Federico Perini & Jacopo Nanni

- **Research activity carried out during the year**

The PhD thesis has been focused on the “Realization of Wide Band Radio Over Fiber Systems for the Downlink of INAF VLBI Antennas”, which aims to develop and implement high-performance links for the intermediate frequency (IF) downlink of VLBI antenna. Initially, the project focuses on studying the link currently used at the Sardinia Radio Telescope. Following this, the goal is to address and improve any identified issues to allow the installation of similar systems at both Medicina and Noto VLBI antennas. The project will involve enhancements of the dynamic range from architectural point of view to optical components of the link: Mach-Zehnder Modulator, Photodetector and Laser.

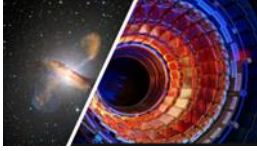
From November 2023 to May 2024, I had worked from Pakistan remotely due to the Visa issue. Anyway, I was able to follow remotely the course “Optical Fiber System M” and to interact with my supervisors thanks to weekly telecons with minor impact on scheduled plan of the PhD.

Due to delay in arriving in Italy in May, the course “Fundamental system engineering and project management for large scientific projects” was missed but now is planned for the 2nd year.

Currently, the focus is on conducting a literature review to build a foundation for subsequent research. The research activity in lab will start from October.

- **List of attended courses and passed exams**

- Optical Fiber Systems M (Credits 7.5, Exam Passed)



1222·2022
800
ANNI



UNIVERSITÀ
DEGLI STUDI
DI PADOVA

**PhD course of National Interest in Technologies for
Fundamental Research in Physics and Astrophysics**

- Radio and Optical Interferometry (Credits 1.5, Exam Scheduled in October)
- **List of attended conferences, workshops and schools, with mention of the presented talks**
 - Kick off meeting 10-11 July 2024 Padua, Italy
 - Conference “MWP2024 International Topical Meeting on Microwave Photonics 17-20 September Pisa, Italy”
- **List of published papers/proceedings**

Nil

- **Thesis title (even temporary)**
 - Design and Realization of wide band (1-18GHz) radio over fiber systems for the IF downlink of INAF VLBI antennas

Date, 10/09/2024

Signature

Muhammad Anwar

Seen, the supervisors

Jacopo Norelli

Federico Penn