



Contribution ID: 36

Type: **not specified**

RF over fiber based distributed RFI monitoring system

GMRT array consist of 30 antennas, 14 antennas are located in central square area of 1x1 km² and remaining 16 antennas are arranged in Y-arm with longest baseline of 15 Kms. In today's growing world the astronomy is facing the problem of increased interference from the nearby places where the observatory is located. Sometimes it become cumbersome to manually identify the interference source in the area of 30 kms, therefore GMRT is developing distributed RFI monitoring system. RFoF technology enables a path for low loss signal transmission over longer distances, carry huge bandwidth of data, and is also immune to electrical noise. The paper discusses the technology, design, and methods for implementing it for distributed RFI monitoring for GMRT array.

This link with omnidirectional antenna at selected GMRT antenna site will carry locally present RFI near the antenna. Each arm will have 2 monitoring stations and 1 will be placed in center square, the data from the 7 stations will be recorded and processed in central processing station, we can develop algorithm to identify the location of interference source. This system will be helpful for studying interference like mobile signal, power line RFI, effects of Digital TV transmission police wireless etc. The designed system supports the frequency range from 10 to 3000 MHz, has inhouse designed low noise amplifier and has an optical link budget of 8 dB which will support an additional distance of 32 km at 1550 nm wavelength.

Presentation type

Oral

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