

## **RASCAL (Reflector Antenna Sensitivity Calculator) Software**

G/Tsys defines the sensitivity of a radio telescope and is an important figure of merit. It is important to know the overall antenna efficiency and system noise temperature of the telescope in order to calculate the G/Tsys. In order to calculate the G/Tsys for uGMRT bands, a Software was developed in-house at GMRT-NCRA, named as RASCAL (Reflective Antenna Sensitivity CALculator).

This paper presents the G/Tsys calculation of any single-dish radio telescope (Prime Focus feed/ Cassegrain Feed) using it is a software and can be used for any other Reflector antenna. Some basic inputs like primary Dish dimensions (F/D, Dish diameters, angle of quadruped, feed house area, etc), Radiation pattern of the feed, LNA noise temperature and receiver losses are required to compute antenna overall efficiency, system noise temperature and finally G/Tsys and secondary Radiation pattern of single dish. The program was also used to calculate the G/Tsys of other radio telescopes in order to cross verify the results and the results were found to match closely.

**Session Classification:** Image Processing, Antennas and RF & Electrical System, Observatory Control System and Software