

NERT Intro-Astronomy Lab and Solar Radio Flux Monitoring Project

Abstract

The North-Georgia Educational Radio Telescope (NERT) has been recently repaired and upgraded after being damaged by lightning over two years ago. Upper level student telescope operators (TOs) use the NERT to obtain solar transit scans in order to measure the solar radio flux. The output voltage is gain-corrected for receiver temperature (T_R) variations during the scan and normalized to a $T_R = 20$ °C and a gain of 10 dB. These measurements are then compared to NOAA solar radio flux measurements to determine the calibration of the NERT voltage output into radio flux units of Jansky (Jy) ($1 \text{ Jy} = 10^{-26} \text{ W/m}^2\text{Hz}$) and ensure repeatability of the NERT observations. From this project, an Intro-Astronomy lab has been developed to engage students in radio band observations. The Intro students use fundamental concepts they have learned about the celestial sphere and the seasonal motion of the sun to determine observation parameters for a solar transit scan. Continued application of the intro-lab and the resulting solar flux measurements will be used for long-term monitoring of the solar radio flux at 1420 MHz.