Recent and Future development of Far Infra-Red (FIR) Balloon borne experiment.

T100 is a TIFR 100 cm balloon borne telescope which is used for the FIR observation with the Japanese Fabry Perot Spectrometer (FPS) as a focal plane instrument. FPS is tuned to the [CII] line at ~158 micron to study Galactic star forming regions. T100 along with FPS is being flown regularly from TIFR Balloon Facility, Hyderabad. The FPS consists of two Fabry Perot Interferometer, one with movable plates to scan the wavelength and the other with fixed plates which acts as an order sorter. FPS is operated in two primary modes as chopped and unchopped modes. In the chopped mode, secondary mirror of the T100 telescope wobbles at the 10 Hz in two different positions such that in one position, telescope is focused on the region of interest and in the other position, telescope is pointed to the blank sky. This helps us to subtract the background emission and to get meaningful results. In the unchopped mode, background subtraction is done separately without wobbling the secondary mirror. Telemetry and Tele-command systems are currently in the process of upgradation, as the existing hardware is quite old and needs modifications. We designed and developed a micro-controller based encoders which can be interfaced with the windows OS. We developed a software in LabVIEW to receive the telemetry data over the Ethernet (as UDP packets) and plot them as per our requirements. We have also developed an onboard telemetry data storage module using the single board computer which is under test. We have also developed an offline telemetry data analysis software in the LabVIEW which operates in the file I/O mode. This helps us to understand the telemetry data using a standalone computer or laptop, without using the bulky data playback system at the balloon facility at Hyderabad. The present single pixel FPS focal plane instrument is planned to be upgraded to 5x5 FPS array, which would improve resolution of image from 90"to 40". This would need change in the Telemetry data rate, frame formats, command rate and command format, data analysis software etc. These changes will be done on both the onboard and ground based systems.