

Overview of the Solar Wind Imaging Facility (SWIFT)

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At the Toyokawa observatory of the Solar-Terrestrial Environment Laboratory (STEL), we are developing the Solar Wind Imaging Facility (SWIFT), which is a dedicated instrument for interplanetary scintillation (IPS) observations of the solar wind. The SWIFT consists of a large cylindrical parabolic reflector antenna, whose dimension is 106 m in N-S direction and 40m in E-W direction, and a 192-element phased-array receiver system which forms a single steerable (in N-S) beam. The observing frequency of 327 MHz is used for the SWIFT, partly because it is suitable for exploring a wide range of the inner solar wind (0.1-1 AU) and partly because it allows us to make cross correlation measurements between the SWIFT and the existing IPS antennas of STEL. The most important feature of the SWIFT is that the SWIFT enables to observe large number of IPS sources in a day owing to its high sensitivity. We expect that we can collect IPS data for more than 100 sources from daily scan of the sky plane using the SWIFT. This increase of IPS data results in marked improvement of accuracy and resolution of 3D reconstructions for both corotating and transient solar wind streams. Preliminary IPS observations with the SWIFT will start in 2008. In this presentation, we report an overview of the SWIFT and the current status of its development.