Brief Report on GMRT and Ionosphere*

G. Swarup

November 4, 1996

Ionosphere will effect GMRT data in three ways.

(a) There are daily variations of the electron density of the ionosphere, particularly with rapid changes in the mornings and evenings.

(b) In the "day-time" ionosphere, there are often present irregularities of about 50 – 200 km in size due to the travelling ionospheric disturbances (TIDs).

(c) During night times there is often present medium to strong scintillations for about 10 – 30% of time, particularly soon after sunset to midnight or hours sometimes even later, depending on the time of the year and the phase of the sun-spot cycle.

A few persons in the group, e.g., Sanjay Bhatnagar, have taken some interest in the problem. Few years ago, I requested Prof. Asish DasGupta of the Calcutta University to look into the likely effects of the ionosphere on GMRT in detail as a part of a proposal approved by the UGC for research activities of the Eastern Centre for Research in Astrophysics (ECRA).

I enclose a copy of a report by him on the work done by his group in phase 1 of the programme. He has got two students working with him. He and his students will be visiting Pune for discussions with scientists at NCRA during November 15–18, 1996. I also suggested to him to predict Faraday Rotation for different elevation and azimuth angles and at different frequencies. He has sent to me some preliminary results of the predicted values of the variations of TEC (Total Electron Content) and Faraday Rotation, as given in Figures 1 & 2.

It would be useful if some of the staff of NCRA may pursue his report and write a short note as what is required from the point of view of GMRT.

G. Swarup

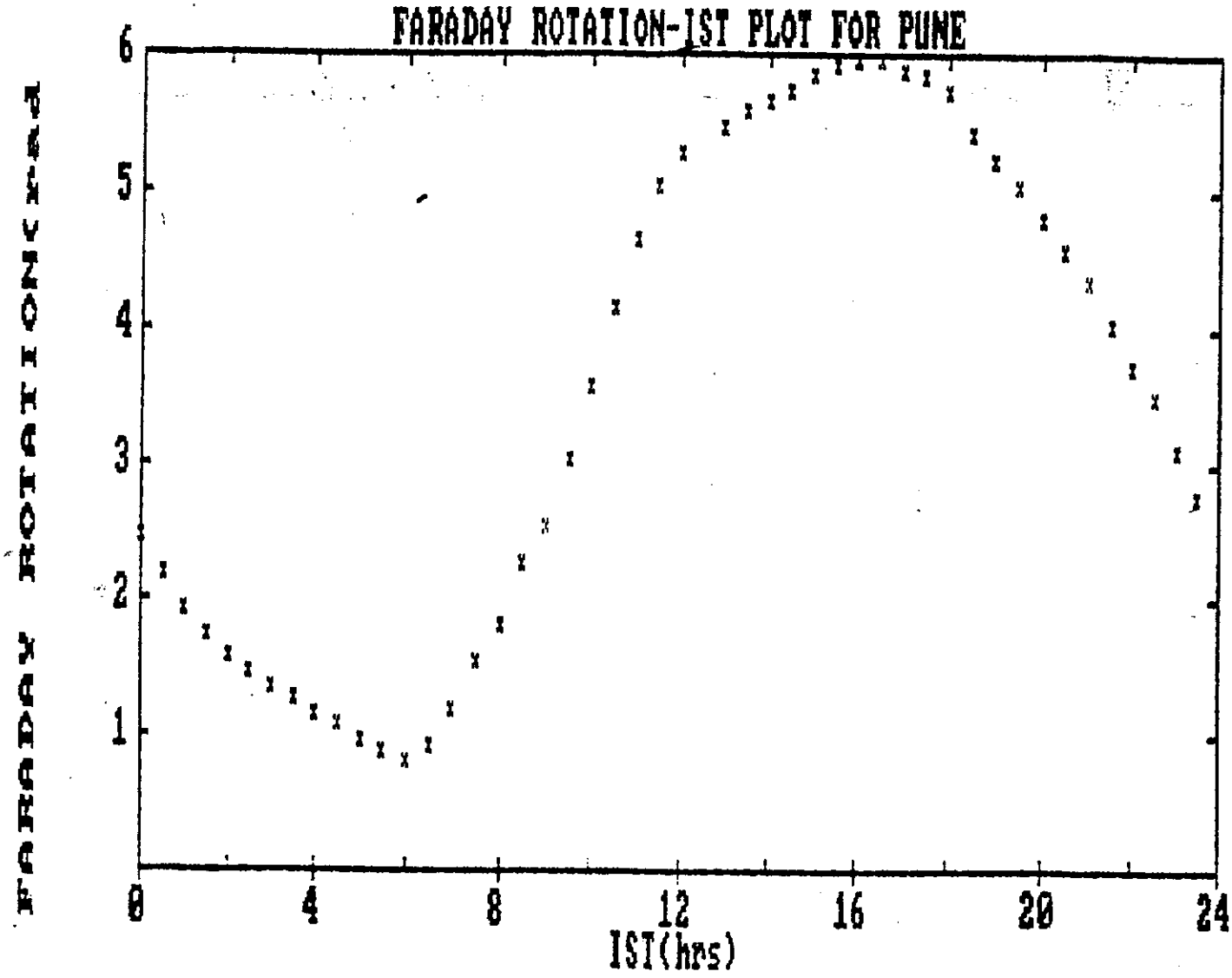
G. Swarup

PS : One copy of his report is available in the Library.

The second copy has been given to Prof. A.P. Rao

Library

*~/GS/ionosphere.tex



During Autumnal Equinox of 1997 for Wave Frequency=150 MHz

Fig.1

23 SEPT 1997
SSN=20.