

# **Physical Research Laboratory**

## **Ahmedabad**

### ***Space & Atmospheric Sciences Division***

#### **Division Seminar**

**Title: “Investigations of neutral wave dynamics using radio measurements”**

**Speaker: Subir Mandal**

**Date: 13 August 2018**

**Venue: Ground Floor Lecture Hall**

**Time: 16:00 hrs**

#### **Highlight of the talk:**

Gravity waves (GWs) play an important role in the energy budget of the upper atmosphere. As they propagate through the atmosphere they modulate the atmospheric parameters like temperature, pressure, density of atmospheric species. Conventionally, GWs in upper atmosphere are measured using optical airglow emissions which are centered at some particular altitudes and hence carry information corresponding to those altitudes. The information on vertical propagation features of GWs in thermosphere are limited due to the fact that optical airglow emissions are integrated over a range of altitudes. We present results obtained using Digisonde measurement wherein analysis of height variation of iso-electron densities corresponding to different transmission frequencies are carried out. As vertical propagation of waves perturbs the electron density at different altitudes, we obtain GW scale sizes in the vertical direction in addition to other parameters. As Digisonde measurements are not limited to sky conditions, this approach enables investigations of GW behavior in the upper atmosphere in all seasons and all times. Using Hines dispersion relation we derive horizontal scale sizes. In this background, I will present the results obtained and describe the details of the method of obtaining the propagation characteristics of GWs. The results from the radio measurements compare well with those obtained from the established optical measurements, both in day and nighttime.

**All interested are welcome.**

