# Physical Research Laboratory
# Ahmedabad

## *Space & Atmospheric Sciences Division*

## *<u>Division Seminar</u>*

Title : **"A new ANN based global 3D dimensional Ionospheric Model (ANNIM-3D) - Approach, Merits, Limitations and scope for improvements"**

Speaker**: Dr. S. Tulasiram**

Date:     **18 March 2019**

Venue:   **Ground Floor Lecture Hall**

Time:    **16:00 hrs**

## <u>Highlight of the talk:</u>

Great efforts have already been made to model the terrestrial ionosphere, conventionally, by solving the conservation equations (physics based models) and fitting the large observational databases using predefined analytical functions (empirical models). While the both methods have their own advantages and limitations, we have adopted a new approach of using artificial neural networks to develop a global three dimensional ionospheric model by assimilating long term ionospheric observations from nearly two decades of ground based Digisonde, satellite based topside sounders and global positioning system – radio occultation (GPS-RO) measurements. The model predicted vertical electron density profiles have been validated with independent ground based incoherent scatter radar measurements at Jicamarca and Millstone Hill. Further, the model predictions are found to be quite promising with respect to ground-based Digisonde and topside satellite in-situ observations beside the well-established IRI-2016 model. The merits and limitations of this model and the scope for the potential improvements will be discussed.

**All interested are welcome.**