

## Proposal for creating a centre for research in solar-terrestrial physics as an interdepartmental activity during IHY at Shivaji university, Kolhapur (16.40°N, 74.15°E)

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**Abstract.** This note describes teaching and R & D activities presently being carried out in the solar-terrestrial Physics at the Space Science laboratory, Department of Physics, Shivaji University, Kolhapur. A variety of solar and geophysical ground based experiments are available, which can be operated on a regular basis during IHY, with financial help from the government funding agencies in India. The main purpose of this note is to briefly describe our experimental research facilities of relevance to IHY.

*Keywords :* solar-terrestrial physics – space weather – IHY

### 1. Introduction

The Department of Physics, Shivaji University at Kolhapur has started M.Sc.(Physics) degree course with specialization in Space Science with effect from 1991. This postgraduate course specializes in the subject of solar-terrestrial physics, astronomy and astrophysics.

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The Indian Institute of Geomagnetism, Panvel, Mumbai and the Physical Research Laboratory, Ahmedabad rendered considerable help in starting teaching and research activities by providing instrumentation for experiments related to solar-terrestrial physics. This note describes our experimental facilities at Shivaji University relevant to IHY science programme.

## 2. Space Science experiments

Some of the Space Science experiments presently available at the Shivaji University are shown in Figs 1 to 7 and they are related to the following topics:

(1) Optical and radio sun celestron telescope and microwave radiometer. (2) Geomagnetism : Proton precession magnetometer. (3) Ionosphere : Night airglow photometers. (4) Middle atmosphere : Partial reflection radar. (5) Lower atmosphere : Automatic weather station and (6) Earthquake prediction and detection : Seismographs and ULF and VLF electromagnetic sensors.

## 3. Future plans

In order to improve the scope of our R and D activities, we propose to make provision to acquire the following items with the government support.

(a) H-alpha filter (6563 Å) and Helium-I filter (10830 Å) for the study of solar flares, sunspots, coronal holes etc. (b) Digital ionosonde, riometer, flux-gate magnetometer, AWSOME receiver. (c) S T Radar for the study of winds, waves and turbulence in the troposphere and stratosphere. (d) A high altitude field station at fort Panhala (Altitude 3000 above m.s.l.) will be setup in 2007 for Astronomy and Aeronomy. All these experiments are relevant to IHY science programme.

Due to limitation of manpower, it is difficult to operate all these experiments simultaneously on daily routine basis. It is therefore decided to introduce automation and in digital form suitable for computer analysis. Proposals for funding this activity are being submitted to concerned Government departments such as DST, CSIR, ISRO and UGC.

Shivaji university is in the process of establishing a new Department of Space Science and applications because of increasing demand for admission to Space Science course among student community. Discussions are also held with ISRO units to provide facilities for student training by working with scientists and engineers.



Figure 1. All-sky scanning photometer.



Figure 2. Search-coil magnetometer.



Figure 3. Partial reflection radar.



Figure 4. Night airglow photometer.



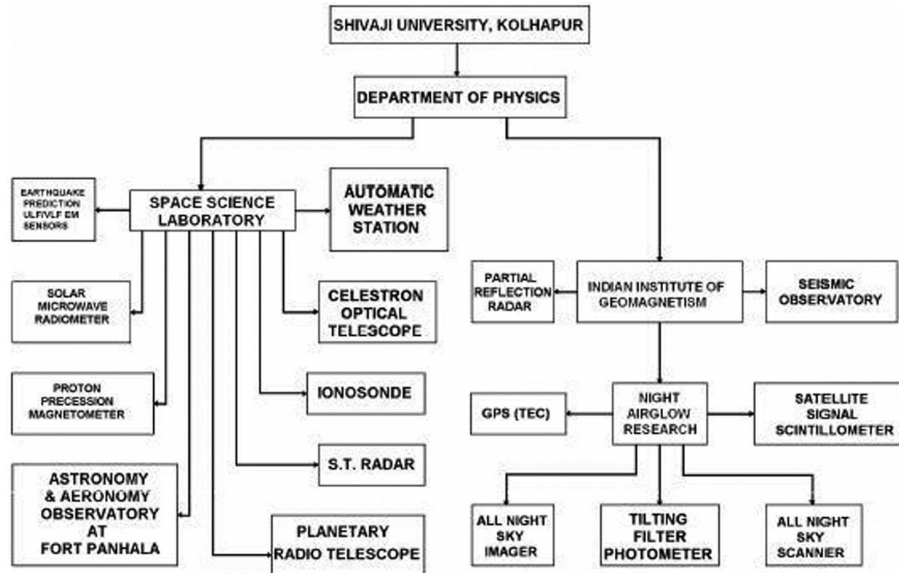
Figure 5. Meridian scanning photometer.



Figure 6. GPS setup.

#### 4. Conclusion

Shivaji university has the potential to play a major role in implementing IHY-related Space Science experiments in the coming years. Solar-geophysical data base can be es-



**Figure 7.** Experimental facilities setup in solar-terrestrial physics at the Department of Physics, Shivaji University, Kolhapur.

tablished at Shivaji university when all the present and the proposed experiments become operational during IHY.

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