Universität Bern
Institut für Angewandte Physik
Sidlerstrasse 5
3012 Bern
Schweiz

Telefon: +41 (0)31 631 89 11
Telefax: +41 (0)31 631 37 65
E-Mail: IAPemail@iap.unibe.ch
WWW: http://www.iap.unibe.ch/

UNIVERSITÄT BERN

Seminar über Microwavephysics and Atmospheric Physics

Referent: Prof. Dr. A. Gasiewski, University of Colorado at Boulder, Boulder, CO, USA

Titel: Application of a CubeSat-Based Passive Microwave Constellation to Operational Meteorology

In their most recent decadal assessment (EarthApplication from Space, 2007) of Earth science space missions theU.S. National Research Council identified the Precipitation and All-weather Temperature and Humidity (PATH) mission as one of tenrecommended medium cost missions. Based on the NRC's outlinedgoals, PATH would have the unique capability of providing all-weather temperature and moisture soundings and cloud and raincellimagery at spatial scales comparable to AMSU-A/B or ATMS, butat sub-hourly temporal resolution. The essential need is to providethe atmospheric penetrability and spatial resolution of operationalmicrowave sensors but with temporal resolution commensurate withthe natural rate of evolution of convectively driven weather. Thisseminar will focus on the merits of a constellation of passivemicrowave sounding and imaging CubeSats for achieving PATHgoals from the multiple viewpoints of calibration accuracy, dataassimilation and global sampling, downlink capability and latency,and orbital lifetime and launch availability. Microwave spectralimagery at 50, 118, and 183 GHz with spatial resolution of ~10-30km and temporal resolution of ~15-60 minutes from such a fleetcould be expected to significantly enhance forecasting of mesoscaleconvective weather and hurricane rain band evolution, along withprovide valuable temporal gap-filling data for synoptic weather forecasting. It is argued that from a joint technology, science, and operational standpoint that a cost-effective realization of the PATH goals, but with the additional features of global coverage and improved NWP sensitivity, can be achieved by a low-cost random-orbit constellation of CubeSats supporting the ATMS and 118 GHz bands. The CU PolarCube mission will be discussed as a basis for this fleet concept.

Zeit: Freitag, 17.03.2017, 14:15 Uhr

Ort: **Hörsaal A97**, Gebäude exakte Wissenschaften, Sidlerstrasse 5, Bern, Schweiz