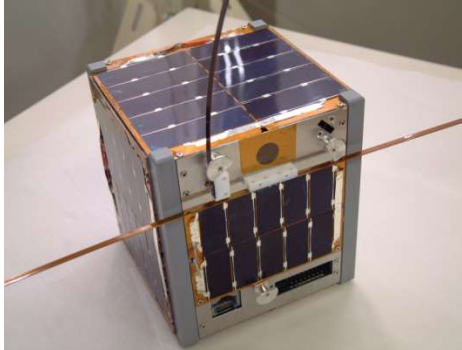


# UMBRIA SPACE LAB



Seminario Mercoledì 23 Novembre ore 10.30 aula 4

## Propagation Issues in Fixed SatCom Systems

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### Abstract

The talk will present the main aspects and issues of the propagation of microwave satellite radio link through the troposphere highlighting the necessity for propagation measurement campaigns and propagation modelling activity. The constituents (oxygen, water vapor, hydrometers and turbulence) more affecting the signal at satellite frequencies at Ka band and above, will be described in terms of attenuation (absorption and scattering), depolarization, scintillation and of their space and time variability. The statistics that can be derived from a complete propagation measurement campaign will be shortly presented and commented. The new Alphasat SCIEX (propagation) experiment will be described with a focus on the payloads and the experimental activity. The European propagation campaign will be also illustrated.

### Table of Content

- Propagation through the troposphere (oxygen, water vapor, hydrometers and turbulence)
- Main effects: attenuation (absorption and scattering), depolarization, scintillation
- Statistical description: cumulative distribution function of attenuation, scintillation standard deviation and amplitude distribution, fade duration and fade slope statistics, site diversity gain and improvements, depolarization conditioned to attenuation). Variability of the various attenuation effects with frequency, time (day, month, year), space
- Models (basic principle, models, short description of software and climatological input)
- Alphasat SCIEX (propagation) experiment