

## Seminar über Microwave Physics and Atmospheric Physics

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**Titel:** Ionospheric Tomography Method via Image Reconstruction Based on Hybrid Grids

GNSS ionospheric tomography has been an important technique for the exploration and inversion of ionospheric 3-D structures. Because of the influence of non-uniform coverage of observation rays and lack of prior information, the accuracy of ionospheric tomography is often not high. However, to obtain high-precision ionospheric imaging, the past researches are mainly focused on the improvement of tomography algorithms, and less attention has been paid to how the voxel construction of an ionospheric model influences the quality of the produced topographic image.

In this talk, it is considered that the optimization of the tomography grid is helpful to improve the inversion accuracy of the Ionospheric Electron Density (IED). Firstly, an ionospheric tomography method via image reconstruction based on a hybrid grid is designed, and its validity has evaluated by comparing with ionosonde data during periods of both quiet and geomagnetic storm. Then, this method is further optimized based on the influence of different resolution settings and different splitting heights on the accuracy of ionospheric tomography. Finally, this method is used to the inversion of the 3D distribution of the IED, and can well express the ionospheric disturbance before the earthquake.

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