



Bachelor/Master thesis proposals

*Each of the here listed topics represents a wider field of possible themes for your thesis.
This list will help you to find your contact person at the Institute of Geodesy.*

Your own ideas and interests are highly welcome. Please come and discuss with us.

Satellite Geodesy for Earth Science

GNSS reflectometry

Deformation analysis from continuous GNSS networks (regional, global) and/or gravity measurements

Future gravity missions, satellite orbit design

GRACE-derived mass-variations: modeling of temporal changes in water basins, ice-mass variations, sea-level changes, ...

Hydro-Geodesy

Surface water monitoring using geodetic techniques (optical vs radar)

Satellite altimetry for hydrological purposes (Swath altimetry, Cryosat, Sentinel 3, Laser altimetry)

River discharge estimation using satellite altimetry and SAR/optical imagery (Modis, Landsat)

Developing an appropriate retracker for altimetry waveforms to obtain meaningful hydrological estimation

Adjustment, Statistics and Numerical Methods

Geodetic time series analysis: Multi-channel Singular Spectrum Analysis (MSSA), Independent Component Analysis (ICA), Canonical Correlation Analysis (CCA), Seasonal-Trend Decomposition based on Loess (STL)

Total least squares and its application in geodetic data analysis

Least squares prediction and Kalman filtering for discharge estimation

Best linear estimation and optimal regularization for geodetic data analysis

Gravimetry and Gravity Field Modelling

Establishing a vertical gradients data set in Stuttgart and its surrounding area

Local gravity field recovery: boundary value element method, Mascons, Slepian functions, radial base functions

Signal processing on the sphere: filtering, convolution, Allan variances, Radon transformation, wavelets

Bohnenberger pendulum: observation and analysis

Contact

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