



 next-generation GNSS antennas

The accuracy of geodetic GNSS antennas

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Outlook

- **Antenna design**
- **fault effects of GNSS antennas and the**
- **Correction of the faults**
- **Calibration methods of GNSS antennas**
- **Compare the results of calibration**
- **Example of a special surveying**

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Antenna Design


Multi layer antennas Patch antennas Dipol antennas	One layer technology 3G+C antenna
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Disadvantages:
For every signal another phase center
High production costs

Advantages:
All signals in one phase center
No nature phase center offsets

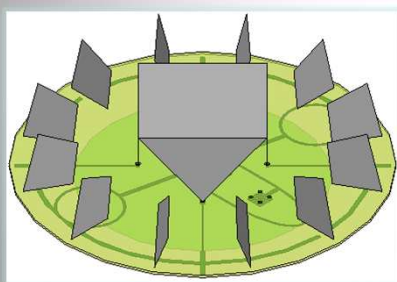

Problem:
Build a broadband antenna for all signals


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Solution: The 3G+C GNSS antenna from navXperience with parasitic elements a registered-patent design

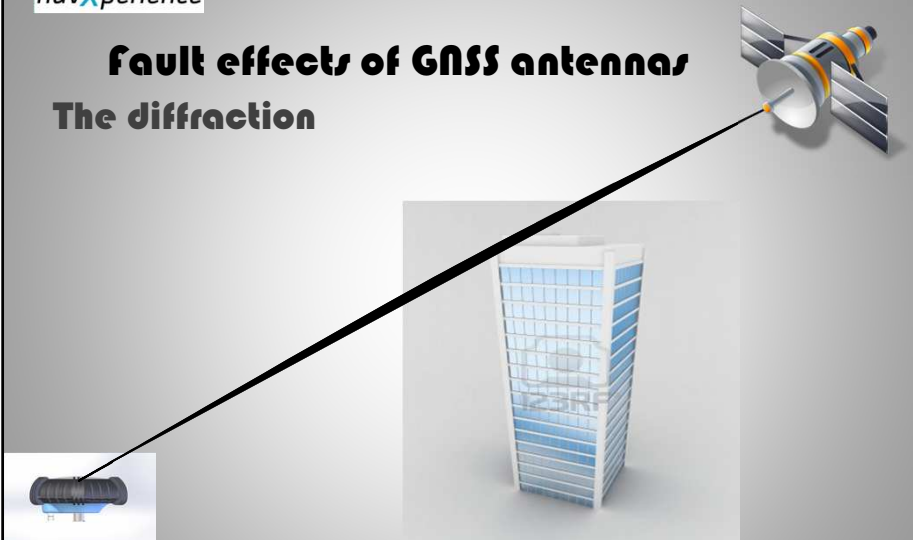
	
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fault effects of GNSS antennas
The diffraction




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fault effects of GNSS antennas
Near-field effects

Don't do this:
Minimum 20 cm from the ground to the antenna



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fault effects of GNSS antennas

Multipath scatters

No problem for a good GNSS antenna

Attention: dangerous

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fault effects of GNSS antennas

Phase center variation


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Antenna calibration methods

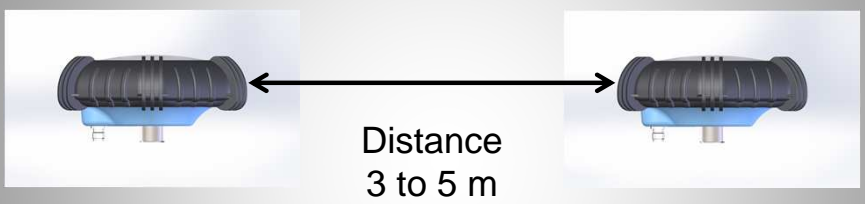
- **Relative calibration**
- **Calibration hall**
- **Calibration robot**

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Relative calibration




Distance
3 to 5 m

After 24 hours turn the antenna around 180°

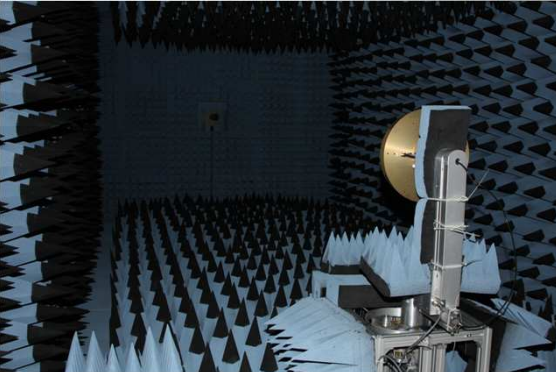
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Calibration hall

Advantage:
Calibrate not
existing's
signals from
Galileo or
Compass




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Calibration robot

Advantage:
The field calibration
with a robot is the
reality with a high
accuracy



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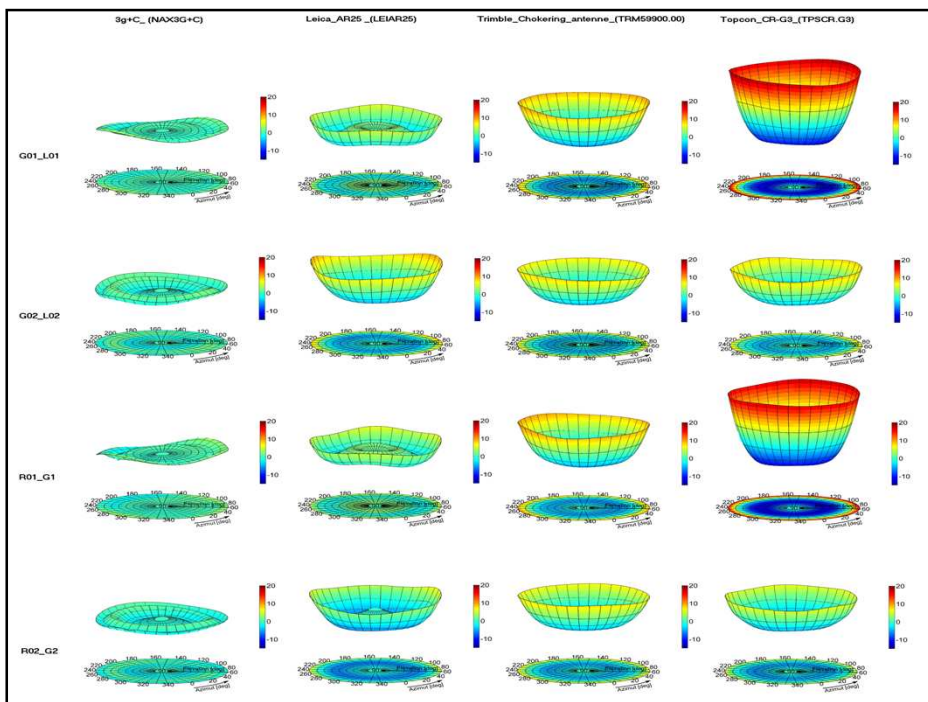
Compare results of a calibration

leica AR 25
Trimble Chokering
TRM 59900.00
Topcon CR-G3
navXperience 3G+C



FIG International Federation of Surveyors
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8th FIG REGIONAL CONFERENCE 2012 **FIG**




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Example for special surveying

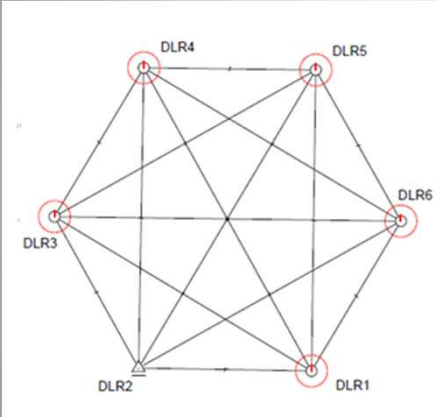


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Example for special surveying





Baselines 2 m

1000 mm 1 m

Scale of calculation error

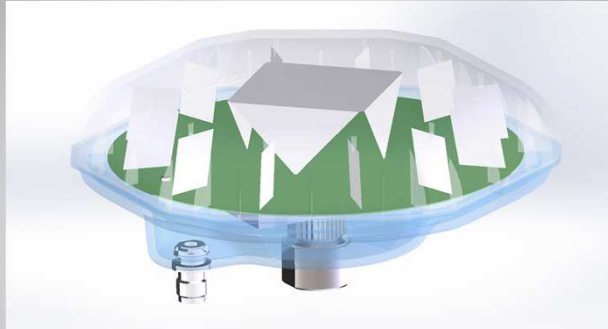
1 mm 1 mm

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**THANK YOU
¡MUCHAS GRACIAS!**



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