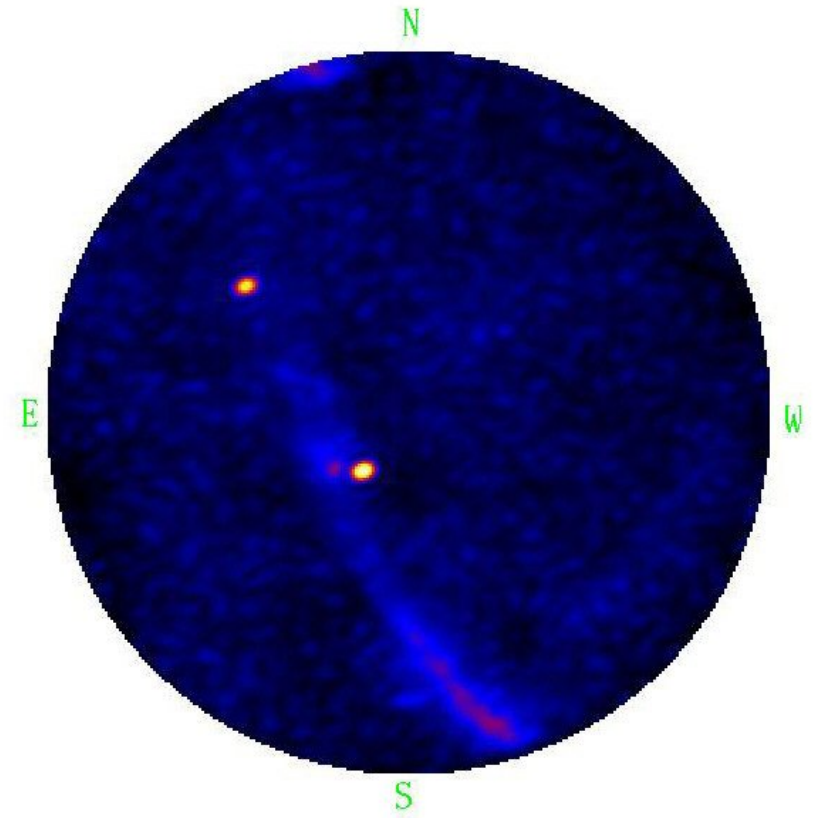


GLOW Stations and Technical Activities

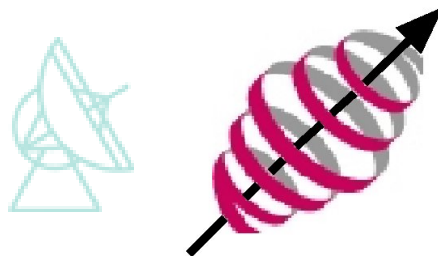
James M Anderson

anderson@mpifr-bonn.mpg.de
GLOW Technical Working Group Chair

On behalf of the LOFAR collaboration



Max-Planck-Institut
für Radioastronomie



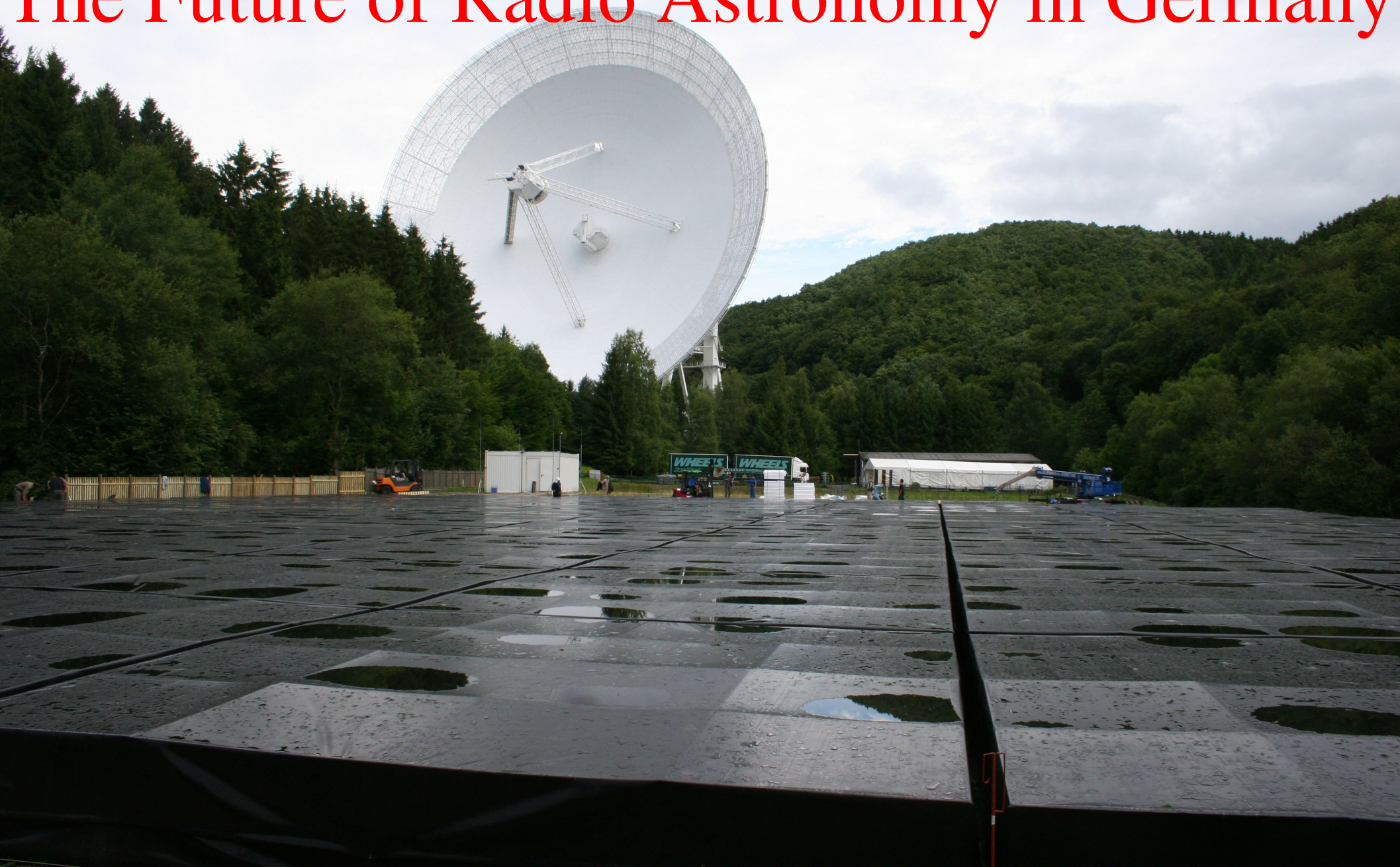
LOFAR



MAX-PLANCK-GESELLSCHAFT



The Future of Radio Astronomy in Germany



GLOW Technical Working Group (TWG)



GLOW field trip to Unterweilenbach, 2009 July

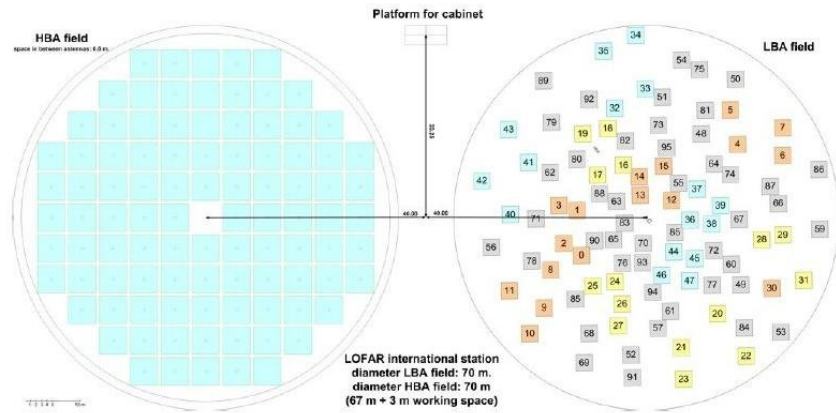
International LOFAR



Spektrum

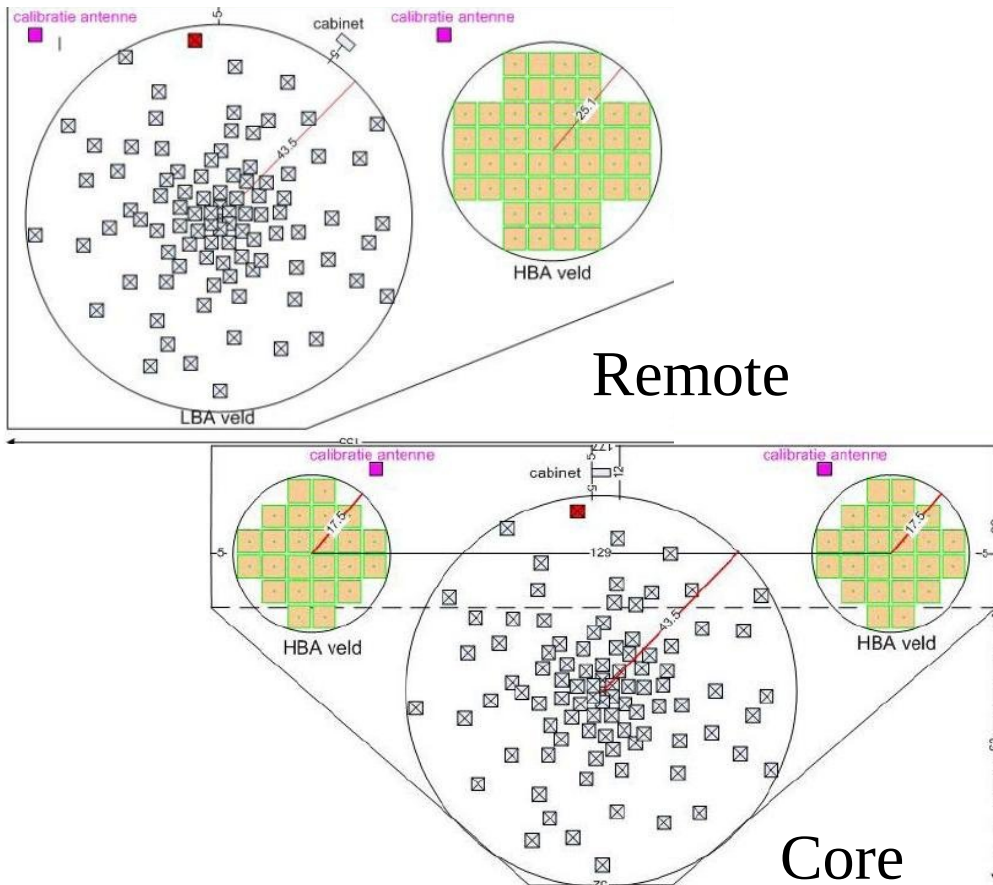


International LOFAR Stations



International

- International LOFAR stations have **96** usable receiver elements, compared to **48** for the Dutch Core and Remote stations
- Twice as sensitive as Dutch stations
- Well suited for single station observations, as well as interferometry



DE601 Effelsberg (Ef)



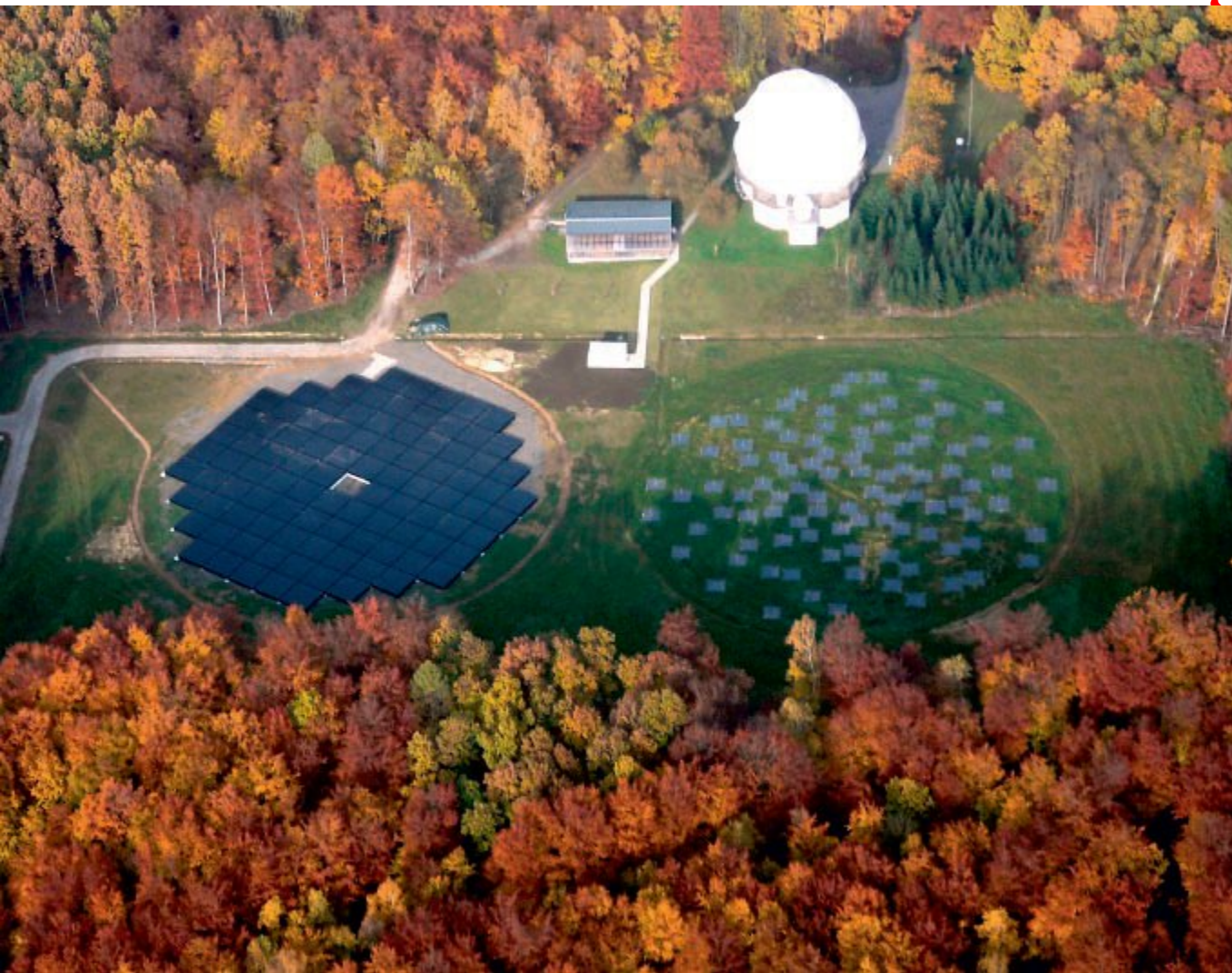
- LBA system finished 2007
- HBA construction finished 2009
- First fringes 2009 August
- First all-sky HBA image 2009 Nov
- Fully integrated in LOFAR observing system

DE602 Unterweilenbach (Uw)



- Low band antennas installed 2008
- High band antennas installed 2010 summer
- Network connection established
- LBA fringes 2010 winter
- HBA tiles awaiting validation

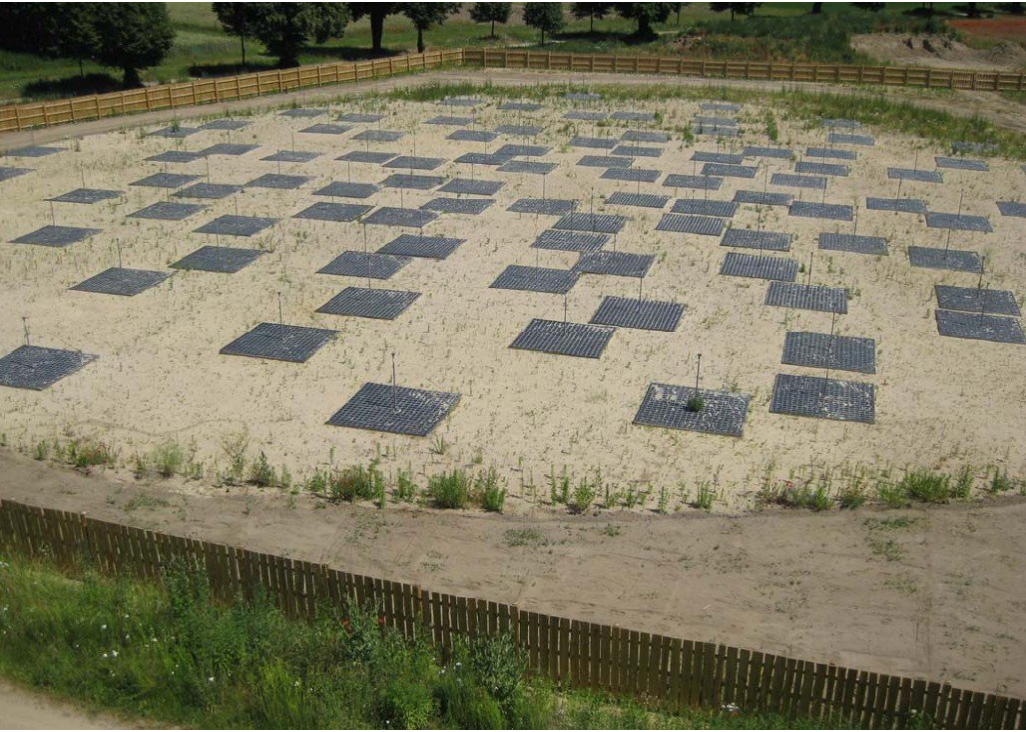
DE603 Tautenburg (Tb)



- LBA installation 2008
- HBA installation 2009 fall
- Network connection established
- First fringes in 2010 winter
- Station integrated into LOFAR operations

Thüringer Landessternwarte/M Pluto

DE604 Potsdam-Bornim (Pb)



Vocks

- LBA construction 2009
- HBA construction finished 2010 spring
- Awaiting network connection

DE605 Juelich (Ju)



Juette

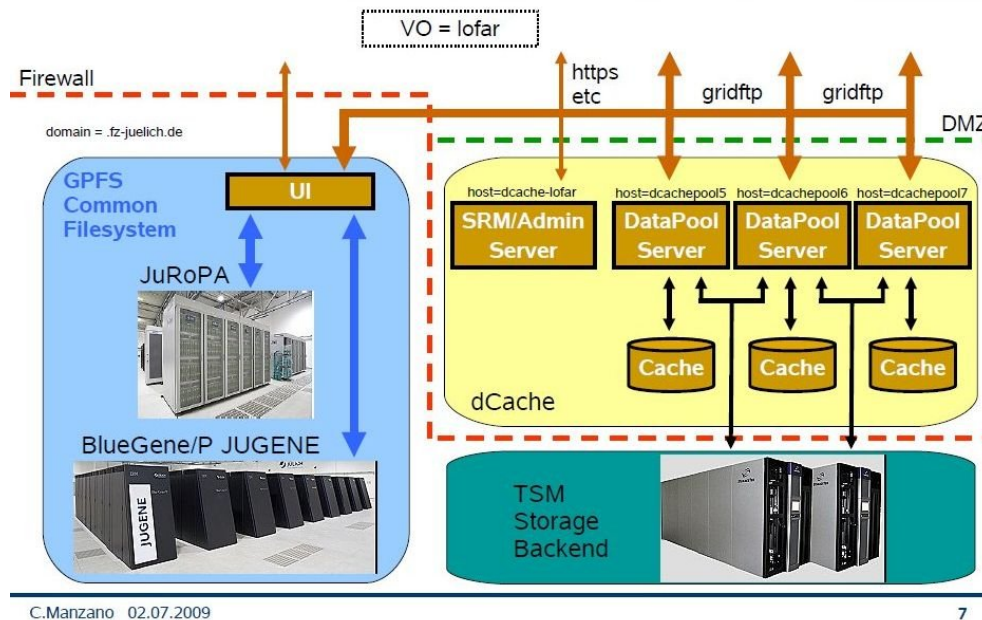
- Ground construction expected to start within 2 weeks
- Network connection should be very rapid
- See poster

GLOW TWG Activities

- Shift of priorities over the past year
 - Away from building stations
 - Toward use of stations by interests within GLOW
- Work in collaboration with the rest of the international LOFAR effort
 - Development of whole LOFAR system
 - Commissioning of LOFAR
 - Development of international-specific interests
- Some specific initiatives within Germany

LOFAR Archive Center at Juelich

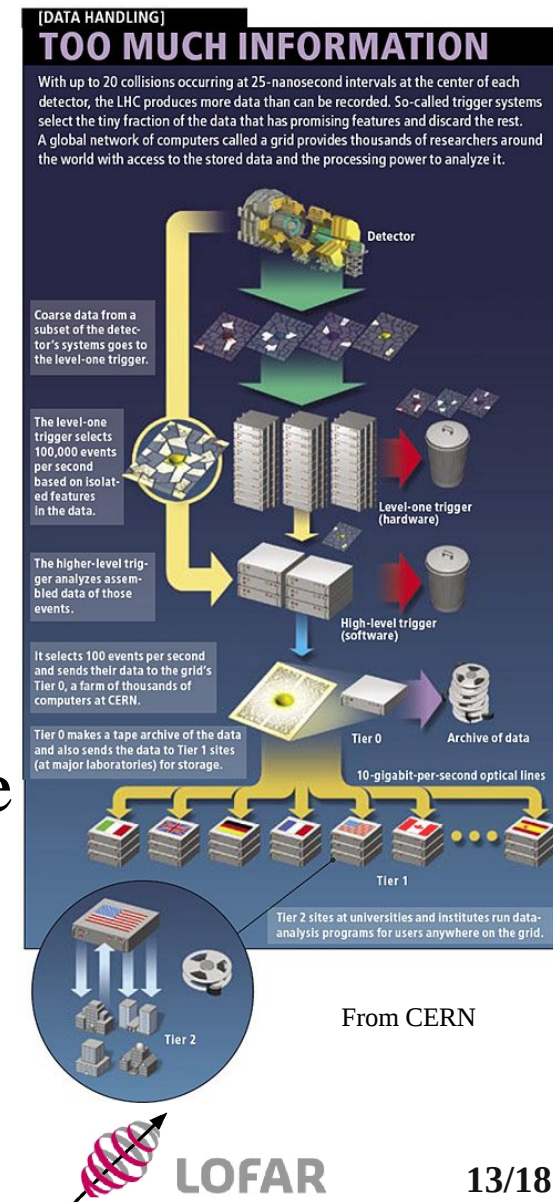
- Forschungszentrum Juelich providing and hosting German LOFAR network hub
- 1 PB of storage for LOFAR to be available
- Currently working on implementation details within larger LOFAR archiving system
- Working on plans to provide post-archive processing capability



7

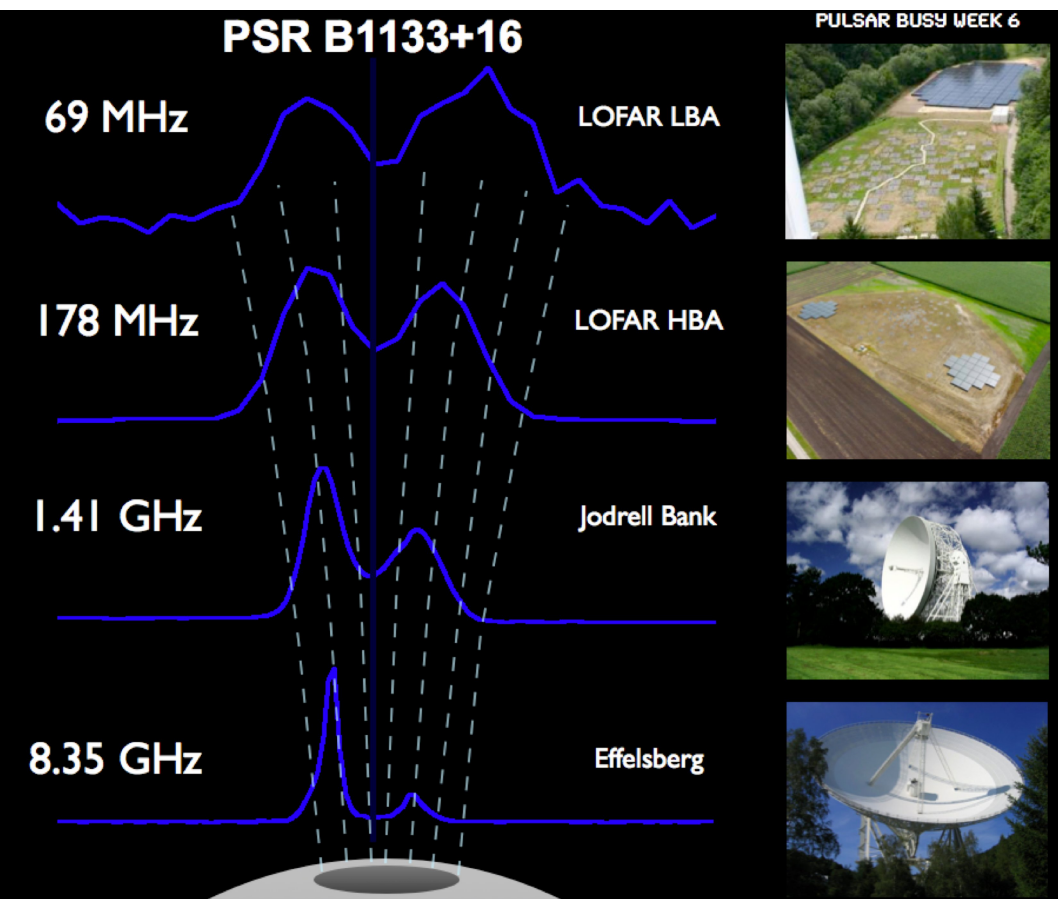
Local Storage and Processing

- LOFAR datasets can be **huge**
 - Raw data rate from LOFAR receivers will be > 800 GB/s
 - Current Blue Gene correlator storage rate capacity is 6.25 GB/s
 - Blue Gene produces data at up to 1.3 DVDs per second, or 0.5 PB per day!
 - **~6 times higher data rate than the LHC at CERN**
- Various key science projects and science interests planning for significant archive and processing facilities outside of Groningen
- Need to transport large datasets around Europe
 - Use dedicated LOFAR 10 GE links
 - Learn from LHC network and processing planning
- Next LOFAR network meeting in Garching



Single Station Operation

- Individual LOFAR stations are useful on their own for science
- Existing plans for pulsar, Solar, planetary, Milky Way observations with single stations

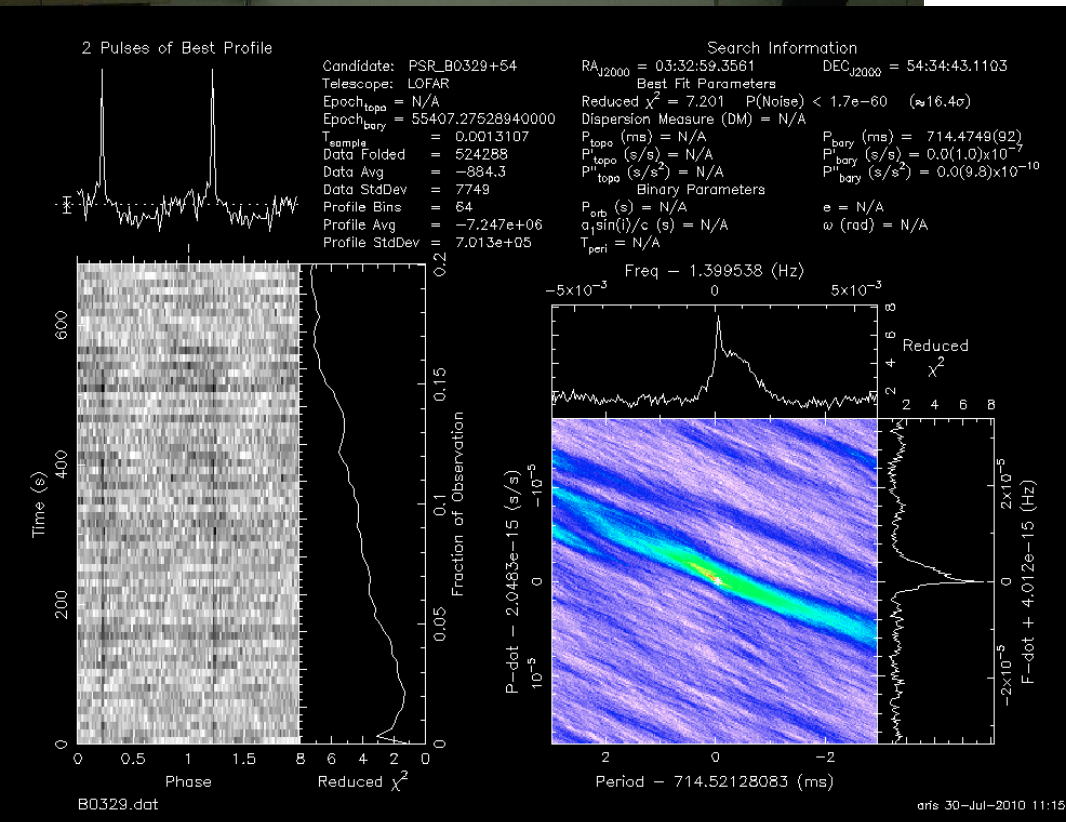


LOFAR Pulsar Science Working Group

Single Station Development

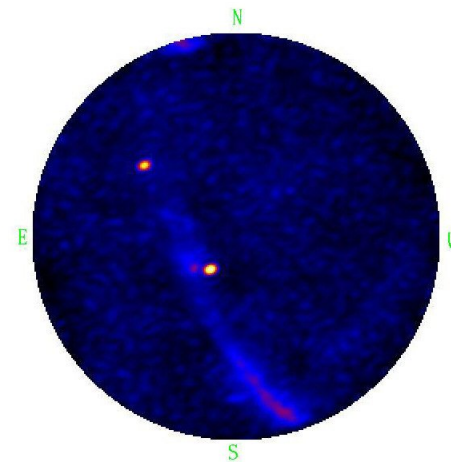


- Single station development meetings co-chaired by GLOW (Juetten, Juelich)
- Picture from last meeting in Bochum
- Software development for reading/storing/processing data locally
 - Reader library written by Oxford
 - Writer application being developed by MPIfR (Kuniyoshi)
 - Pulsar detection using this system at left



Additional GLOW Development

- Interest in developing a small-N station (~ 8) correlator for LOFAR (Anderson, MPIfR)
 - Based on DiFX
 - To ease load on Groningen during subarray operation of LOFAR
 - Production version to be hosted by Juelich
- GPU processing (Juelich)
- All-sky imaging
 - Information on large spatial scales
 - Transient studies with 2π sr instantaneous field of view
- Other projects...



Training the Next Generation



U Klein

- **Second GLOW Interferometry School** took place two weeks ago
 - http://www.astro.rub.de/glow_school_2010/index.html
 - Organized by Hamburger Sternwarte/GLOW
- LOFAR single station use covered in the upcoming **European Single Dish School in the Era of Arrays**
 - <http://www.mpifr.de/div/effelsberg/SummerSchool/index.html>
- More schools will certainly follow



End



New GLOW technical experts?

D Engels

