NMI3-II access to BER II

Thomas Gutberlet

HZB User Coordination Neutrons

HZB offers access to neutron and photon instrumentation at the neutron facility BER II and synchrotron source BESSY II

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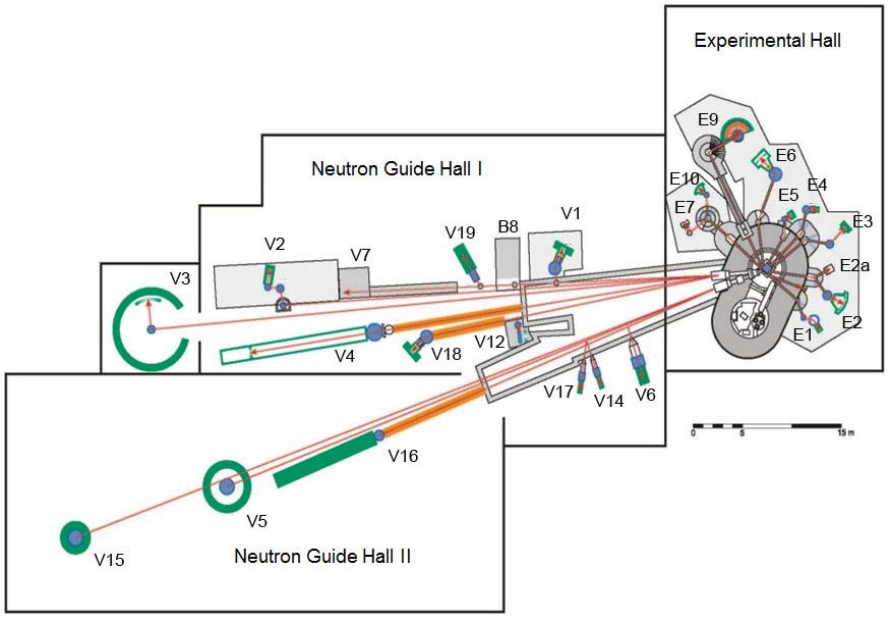
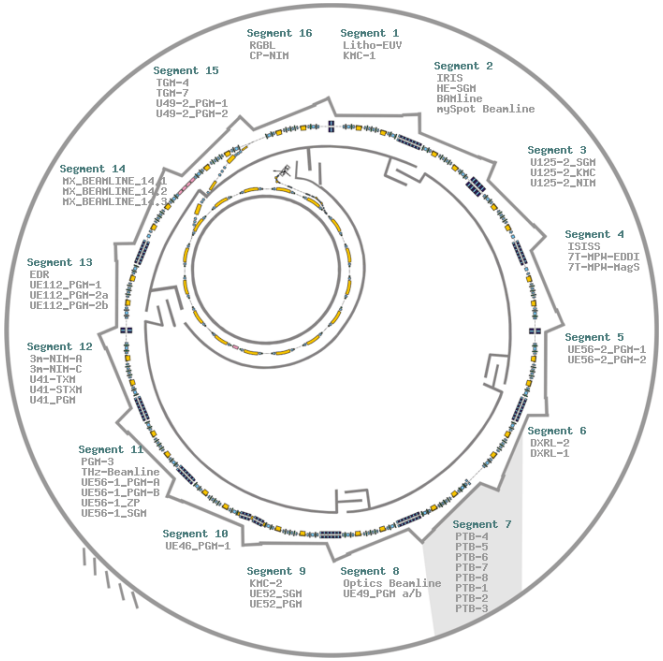
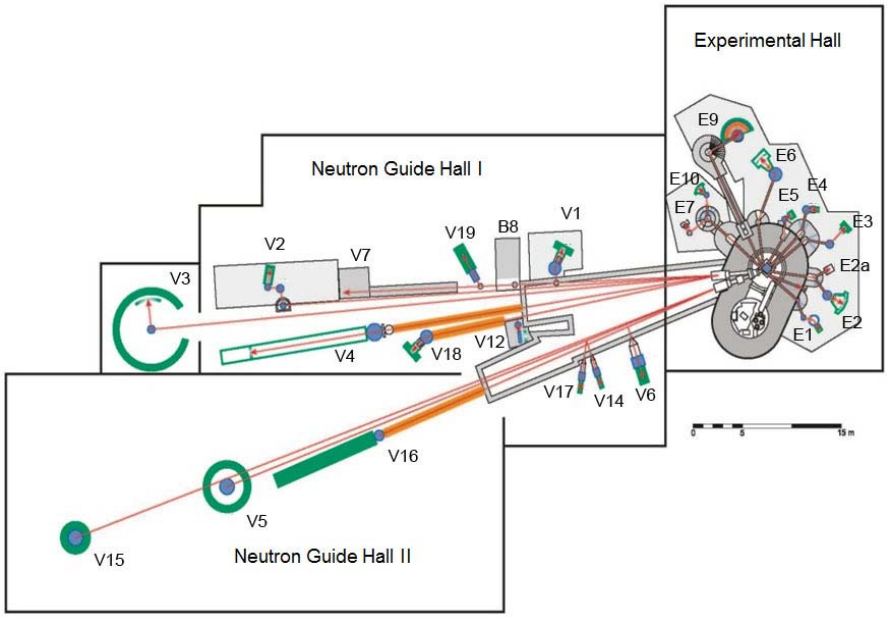


11 thermal instruments
15 cold instruments
2 x-ray instruments

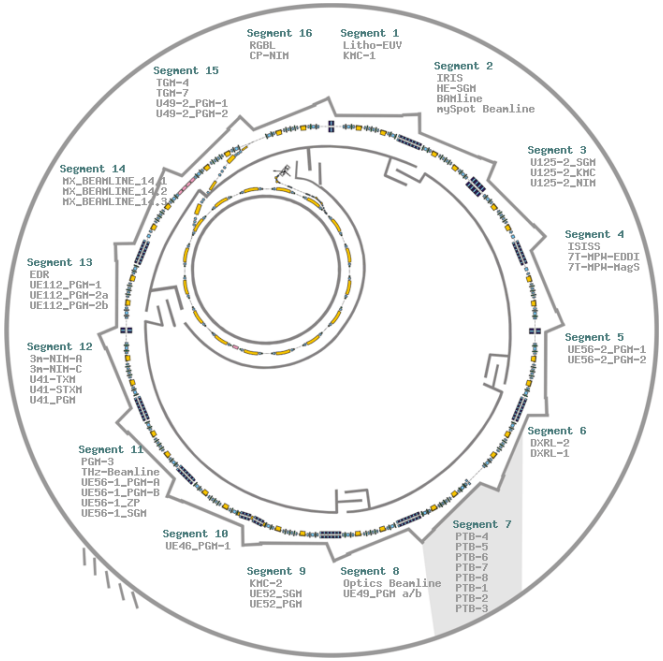


54 beam lines with 41 exp. stations

HZB offers access to neutron and photon instrumentation at the neutron facility BER II and synchrotron source BESSY II



70 % of beam time external
30 % in-house



85 % of beam time external
15 % in-house

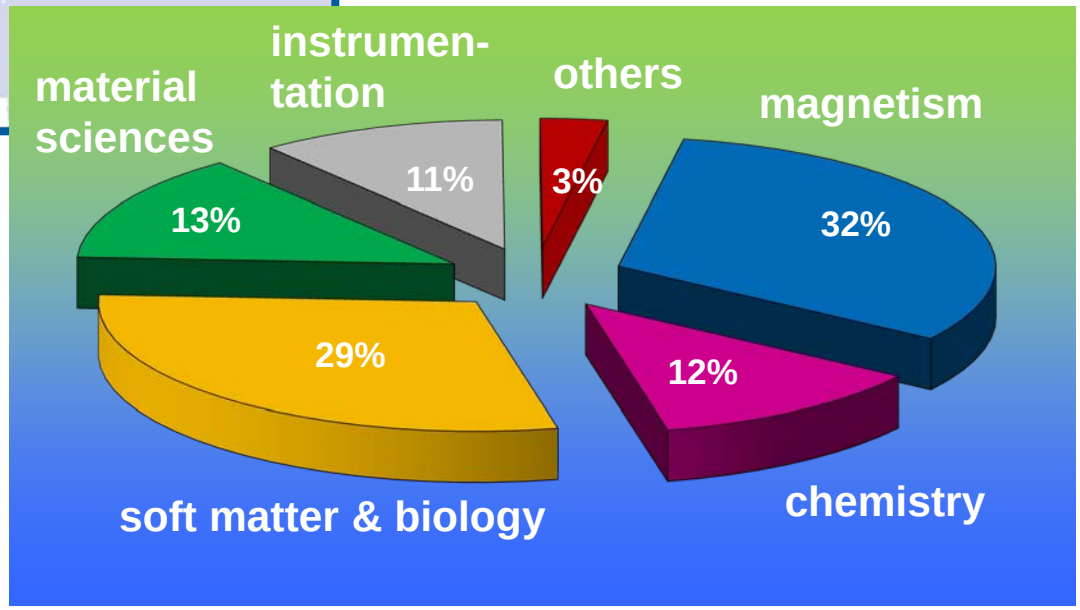
User access to BER II

~ 300 external proposal

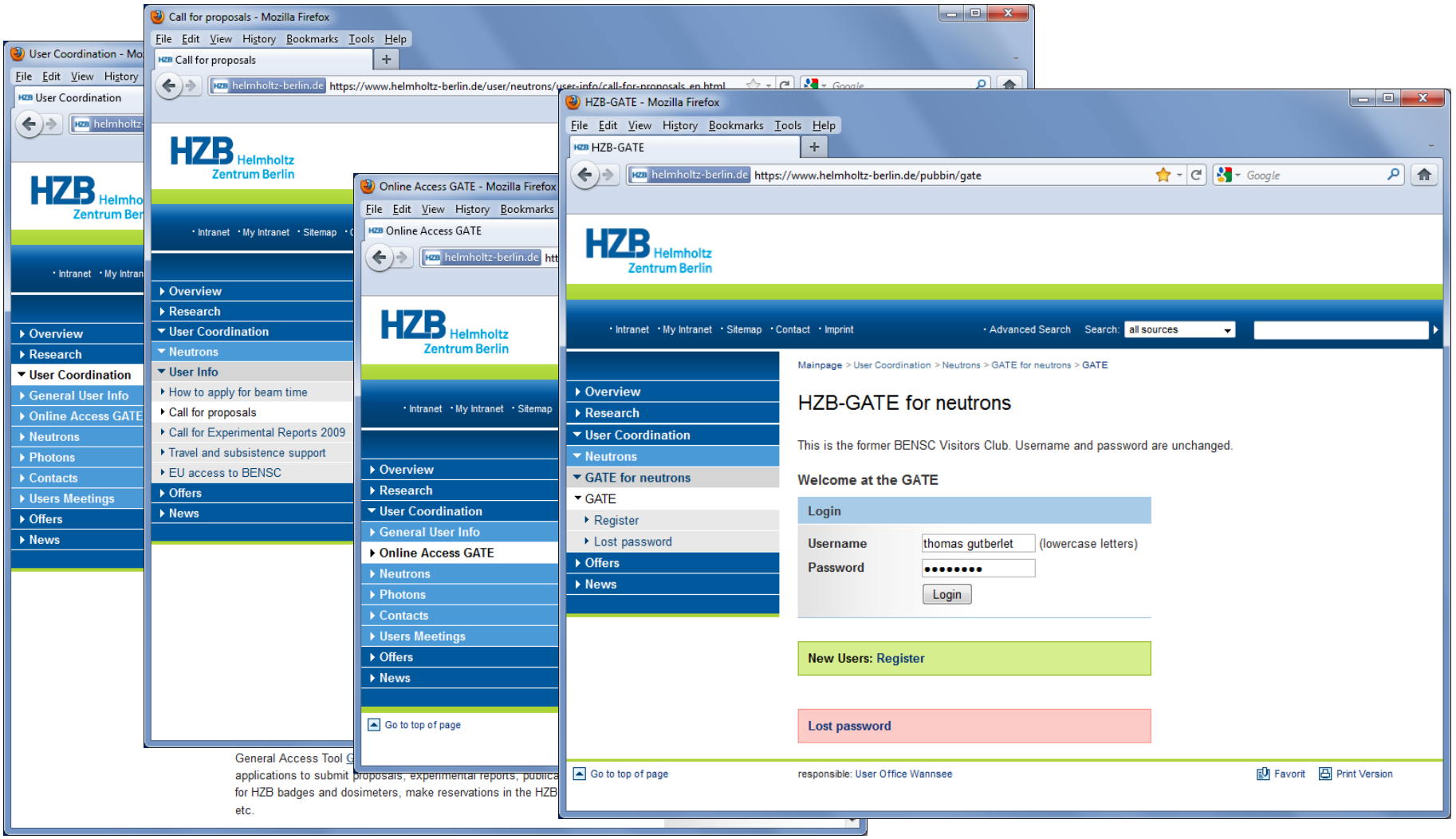
~ 200 experiments scheduled

~ 400 scientific visits

~ 60 % European users



Access to neutron instrumentation at BER II



Access support for users at BER II

- **new NMI3-II funding Feb. 2012 – Jan 2016**
  - **usually support of 1 scientist T&S**
- **HZB support of users of German universities**
- **Users have to apply for funding at the User Coordination**

HZB activities at NMI3-II

Coordination activities

- WP 5 Integrated User Access
- WP 6 Data Analysis

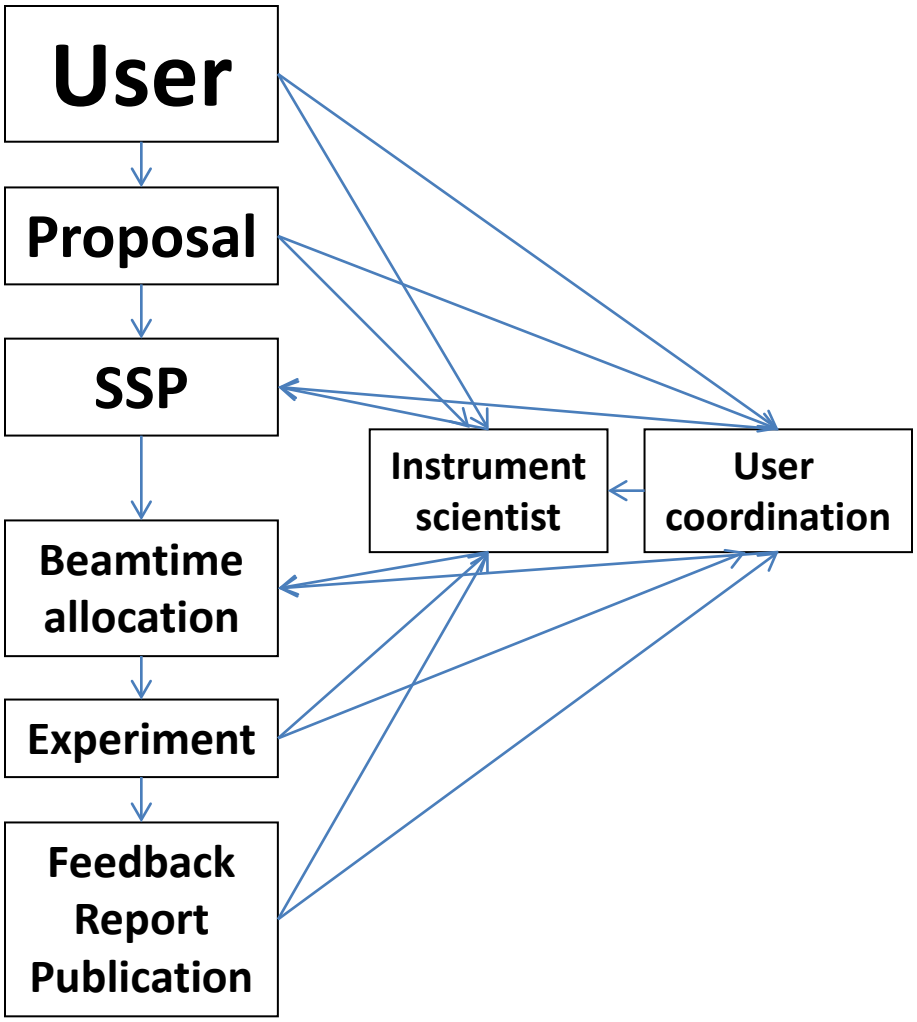
TAA

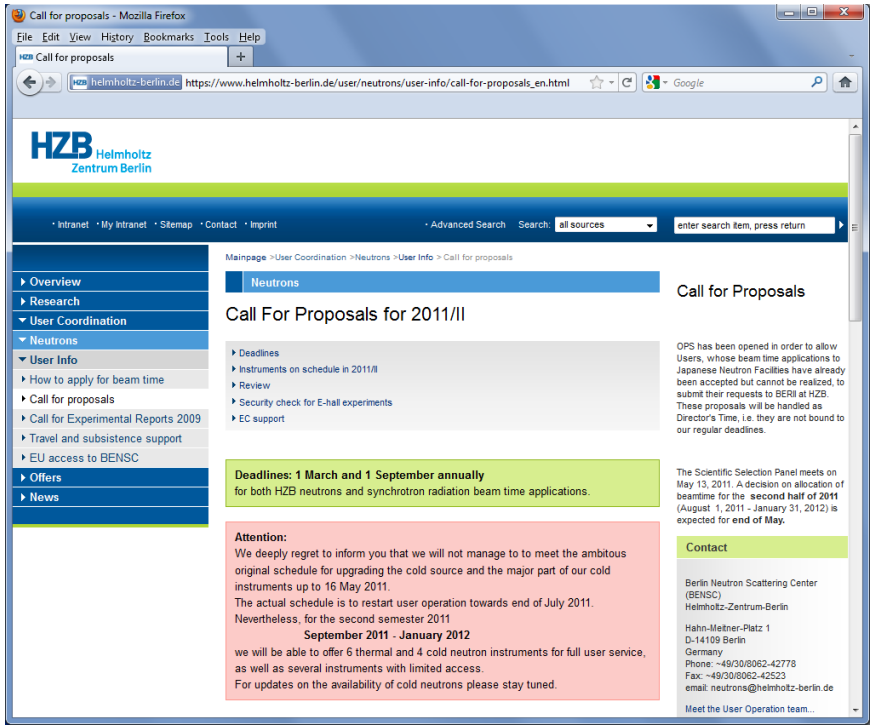
- WP 12, 300 beam days

RTD/Innovation

- WP 18 Imaging
- WP 20 Advanced Tools Soft matter & Biology
- WP 21 Detectors

Proposal – User Workflow



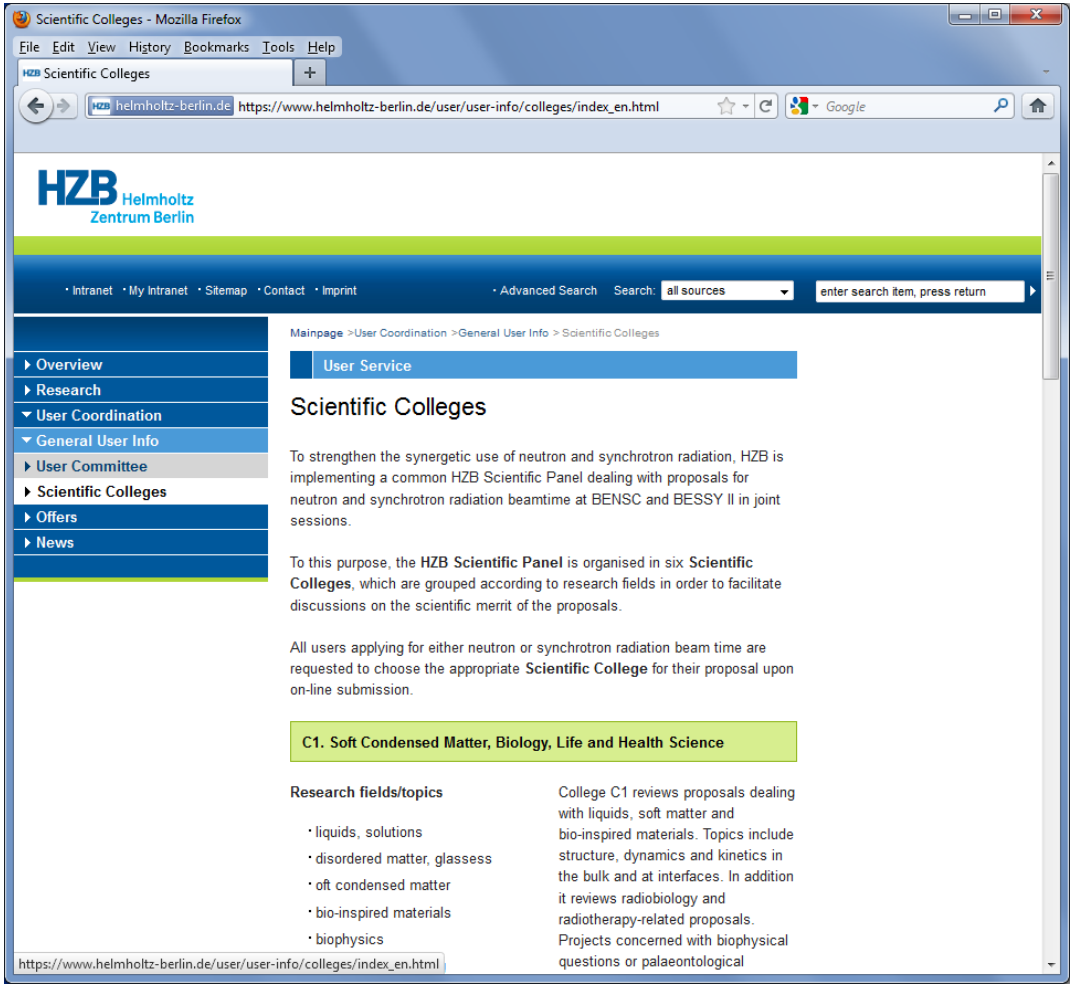


Proposals are evaluated according to scientific merrit

HZB Scientific Selection Panel (SSP)

Scientific Colleges:

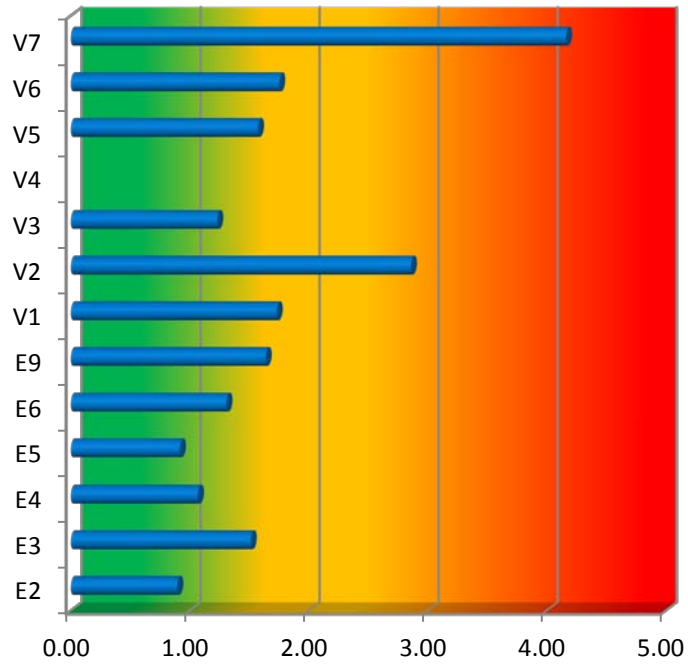
C1 Soft Condensed Matter, Biology, Life and Health Sciences
C2 Macromolecular Crystallography
C3 Chemistry, Catalysis and Diluted Matter Research
C4 Electronic Structure (not magnetism)
C5 Magnetism and Superconductivity
C6 Material Sciences and Hard Condensed Matter



Overbooking at BER II neutron instruments

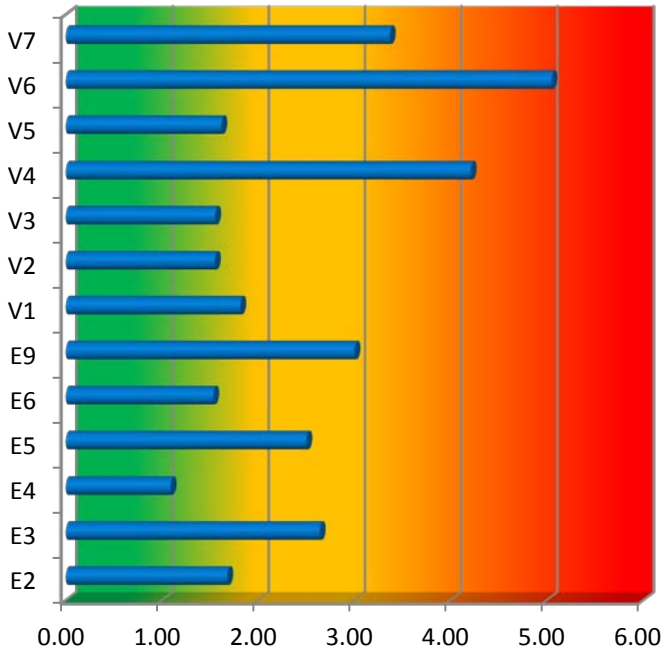
Proposal round 2010-I and 2010-II

Overload 2010/I



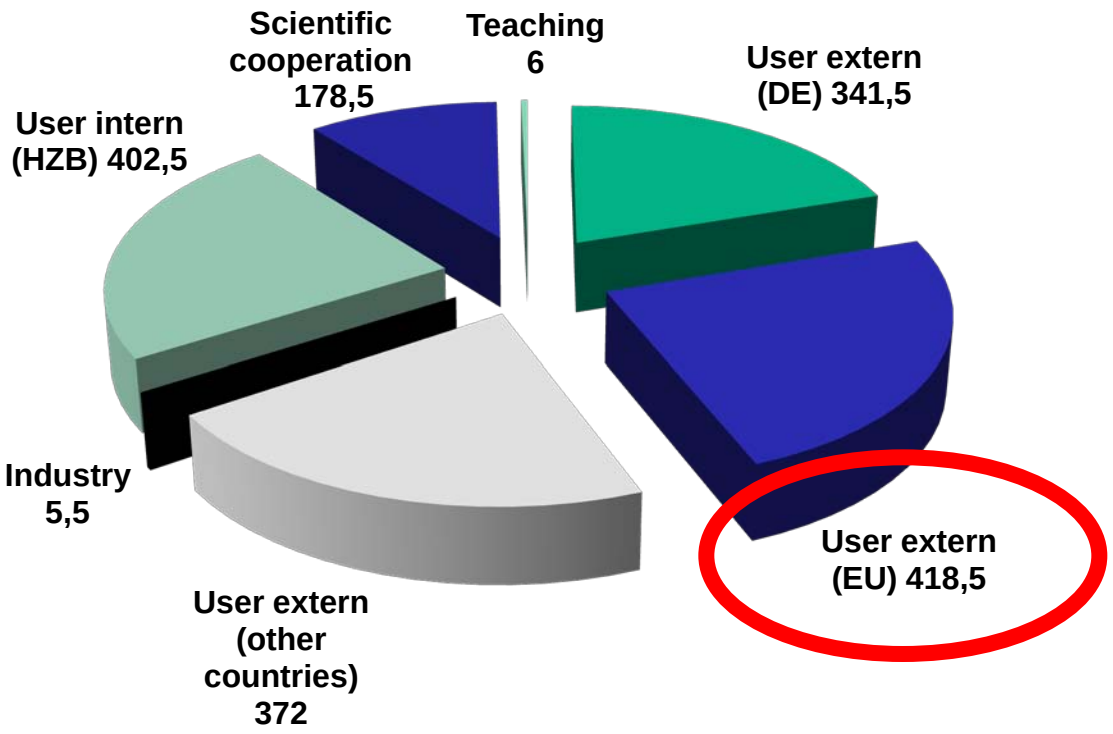
Available beam time: 594 beam days
Requested beam time: 914 beam days

Overload 2010/II



Available beam time: 452 beam days
Requested beam time: 941 beam days

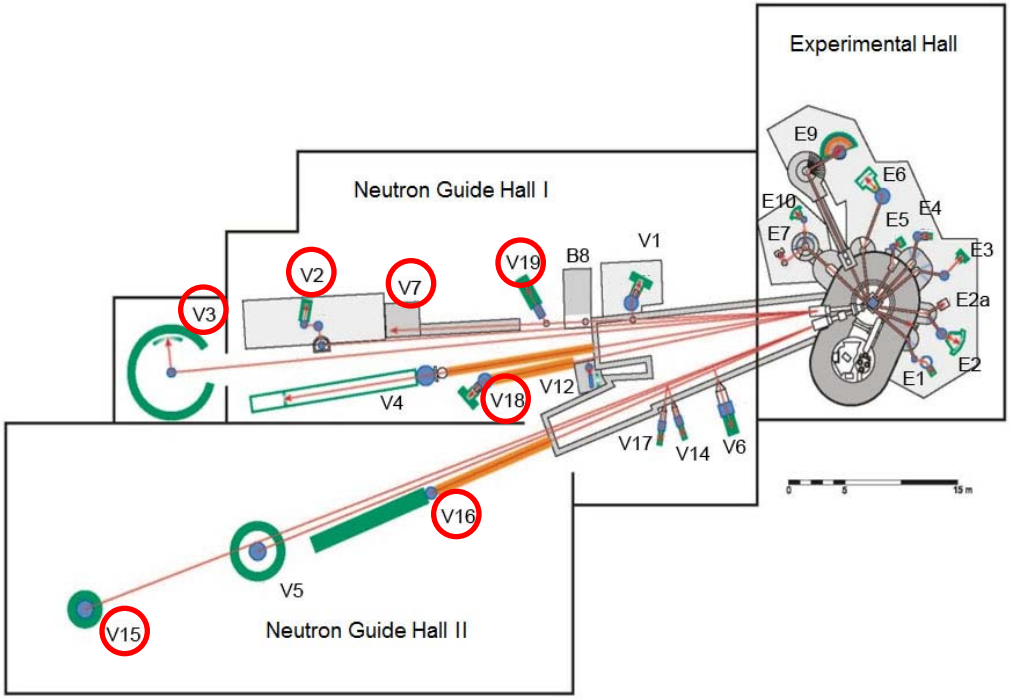
Beam days neutron instruments at BER II used in 2010 (Jan.-Oct.)



37 % of all external beamtime

Used beam days in total: 1725 beam days
extern used: 1137.5 beam days (66 %)

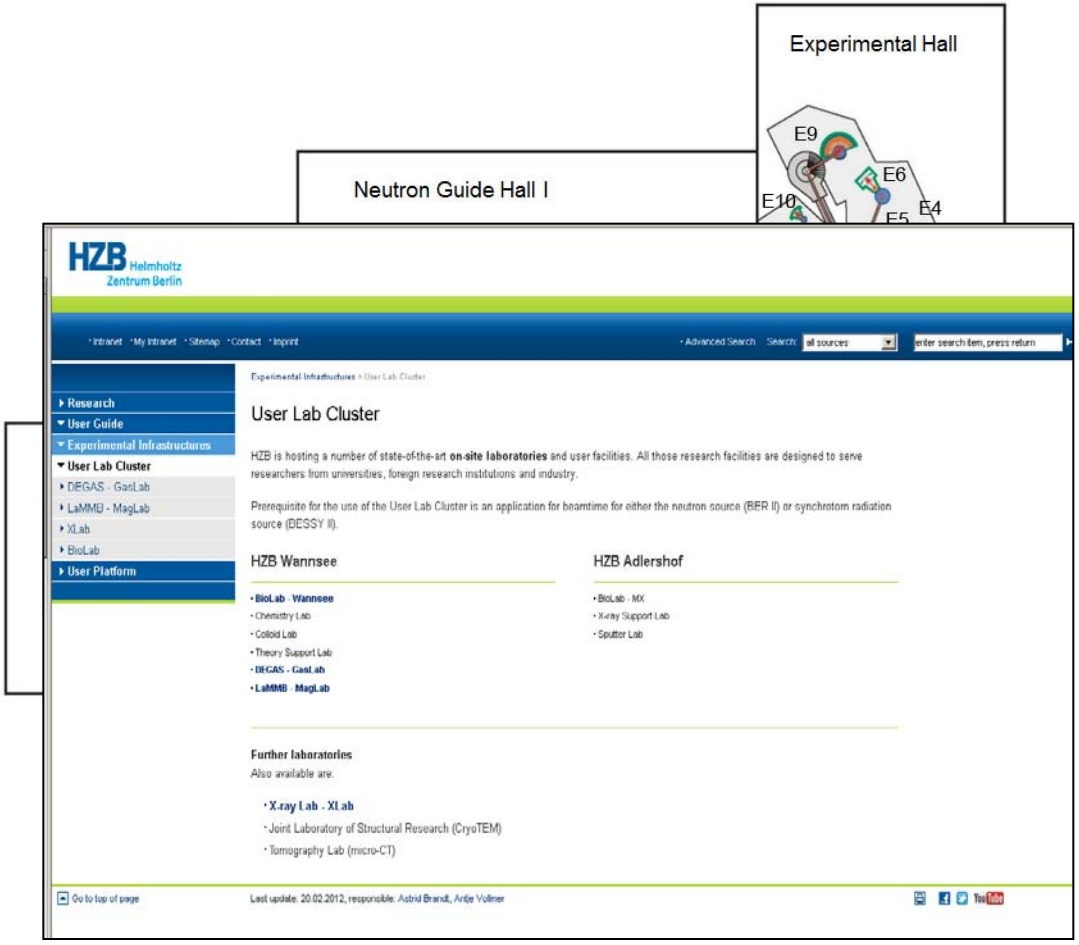
Up-grade of beamlines and source at BER II



- up-grade of cold source
- up-grade of neutron guides in neutron guide hall I

- up-grade of FLEX (2012)
- up-grade CONRAD (2011)
- up-grade of NEAT (2013)
- new PONTO II (2013)
- commissioning VSANS
- commissioning BioRef
- EXED

User supporting sample environment and laboratories



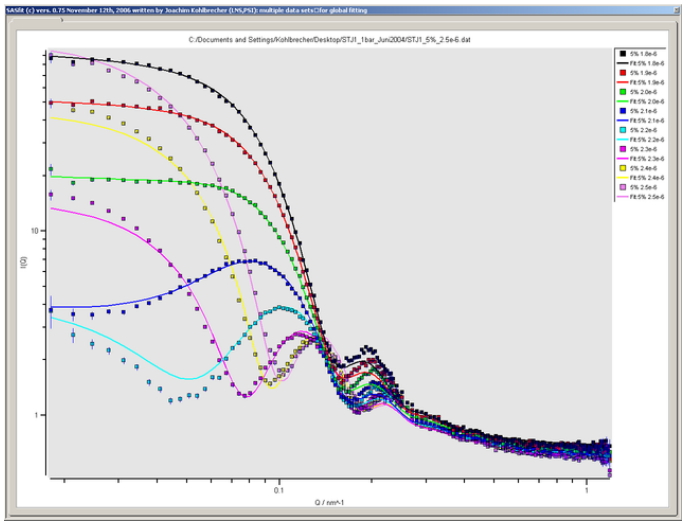
Sample environment at instruments
(cryostats, furnaces, magnets, pressure cells, gas atmospheres)

Laboratory facilities
- BioLab
- Chemistry Lab
- Colloid Lab
- MagLab
- X-ray Support Lab
- Applied Materials Lab
- Sputter Lab
- Theory Support Lab

Radiation facilities
- NAA

Theory Support Lab (J. Dzubiella, F-I2)

➢ **Basic service**:
Support for numerical analysis, fitting, and possible theoretical interpretation of (neutron and X-ray) scattering data



➢ **Software / numerical methods**
SANS: *egraph* (Data recording / export)
→ *Mantid* (Data gathering / reduction)
→ *SANSfit* (Fitting by form and structure factors)
→ support for inclusion of nonstandard form and structure factors
ASAXS:?

➢ **Advanced methods / statistical physics**
(long term proposals / collaboration)
integral equation theory (IET), density functional theory (DFT), computer simulations: Monte-Carlo (MC), molecular dynamics (MD)

MagLab (Laboratory for Magnetic Measurements at the Helmholtz-Zentrum Berlin LaMMB) (K. Kiefer NP-H21)

- cooperation of M-I1 and NP-H12

- central access to low temperature and high magnetic fields

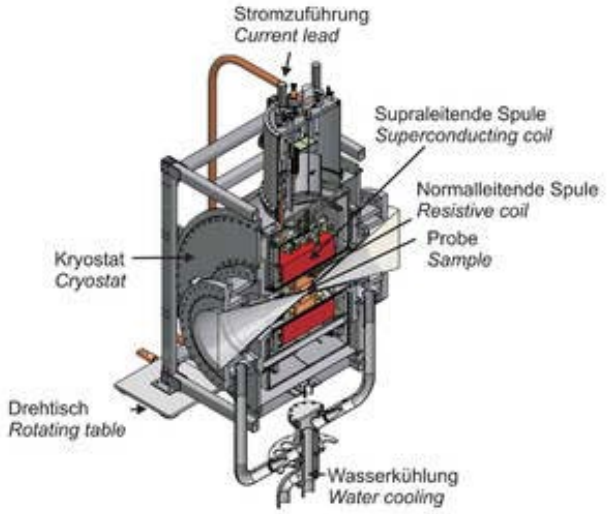
- presently 5 cryomagnets operational up to 17T and down to 50 mK

- ≥ 100 experiments per year

- combination of standard and highly specialized equipment

- magnetization, heat capacity, electric resistivity, dielectric properties

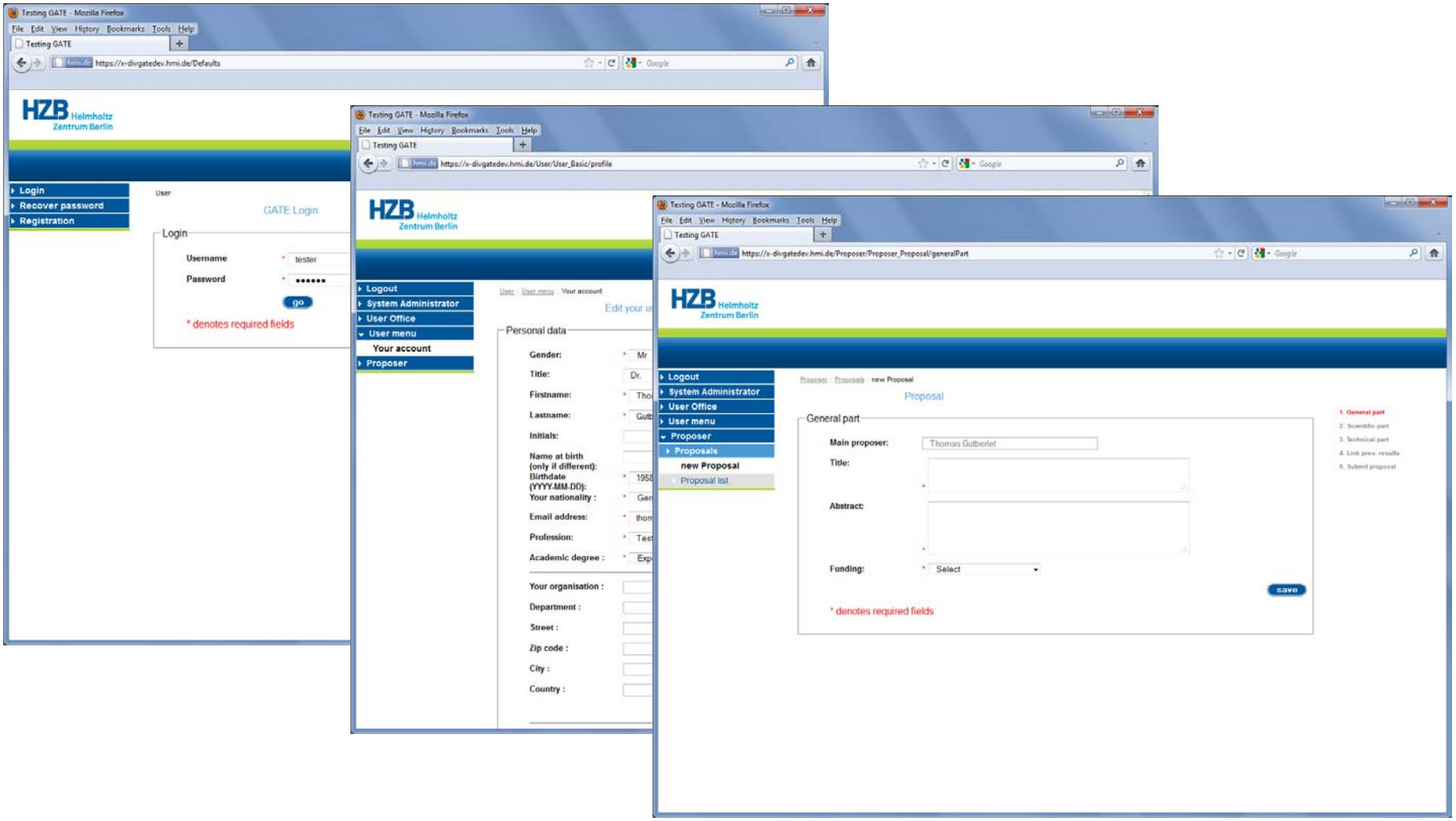
High Magnetic Field Project



High Field Magnet for neutron scattering reaching 25-31 T

- total investment costs ~20 million €
- construction time of ~5 years
- start 2007

GATE - the common HZB user access portal



Neutrons meet User
HZB User Coordination Neutrons

www.helmholtz-berlin.de/user

Thank you