

# Status BESSY

P. Kuske for the BESSY team

## Statistics

Beamtime

Operation Schedule and Mode

Experimental Floor End of 2003

## Experience Gained 2003

Orbit Stability

Superconducting WLS

Machine Studies

## Ongoing and Future Projects

TDR BESSY FEL

Fs Slicing

PTB Ring

SC Higher Harmonic Cavity

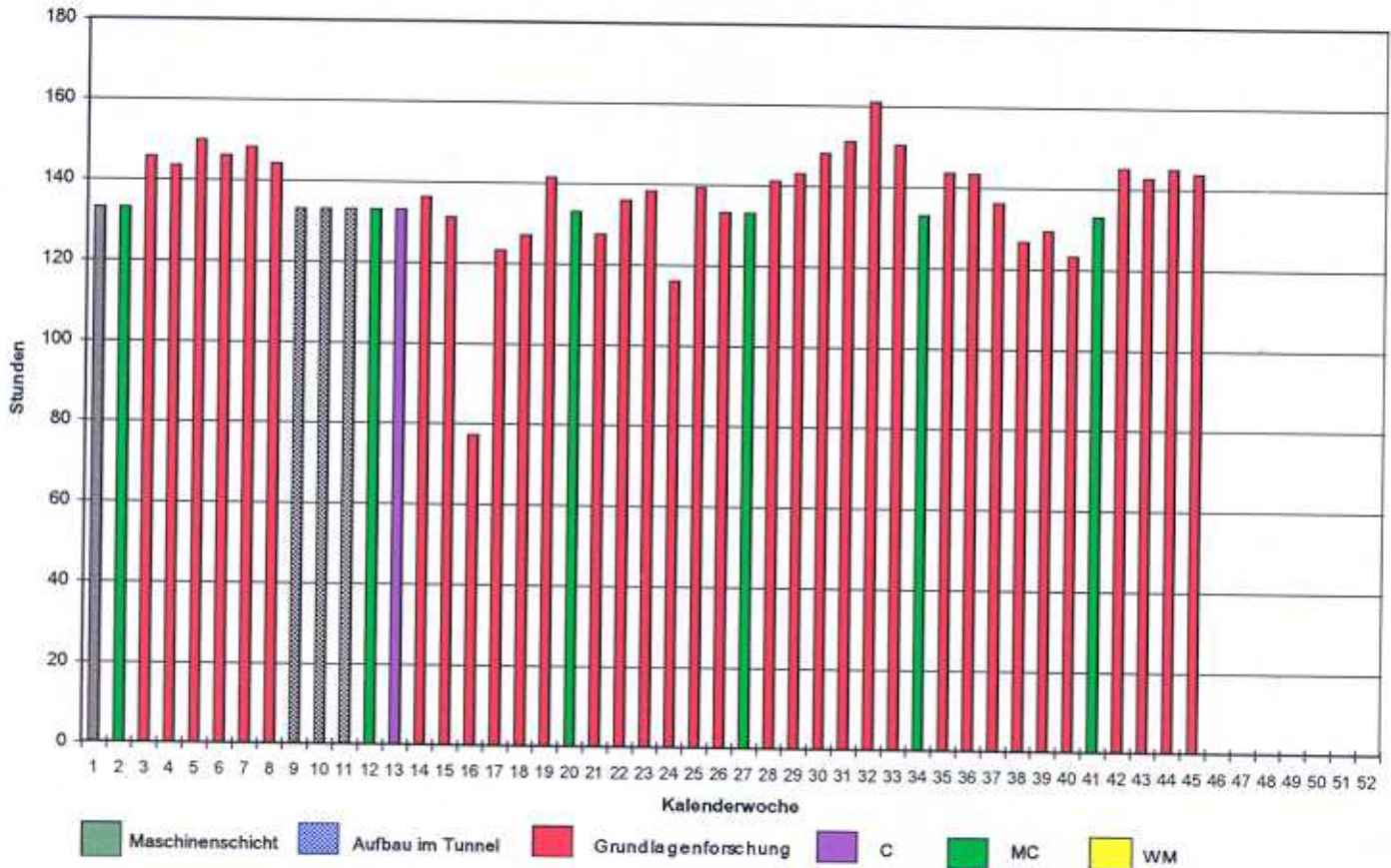
Superbends

# Beamtime Statistics

Soll: 4522 h  
Ist: 4677,5 h

+ 3,44 %

Strahlzeitstatistik 2003 BESSY II (1. bis 45. KW)



## Schedule of Operation:

- Most of the time multi bunch mode (350 out of 400 buckets)
- 4 weeks of single bunch mode
- 1 week low alpha mode (multi and single bunch) for CSR

## Mode of Operation

- 24 hours, 7 days a week
- Monday mornings maintenance
- Thursday mornings ID and BL commissioning
- Machine development: Sunday and Wednesday night

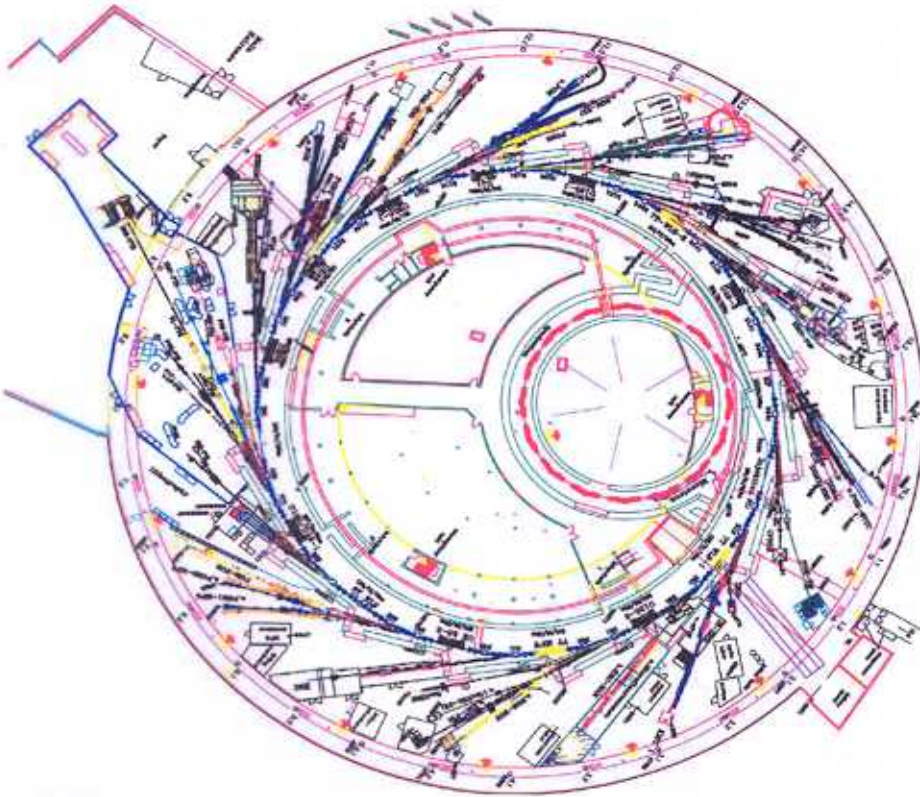
# BESSY Floor Plan

21 BL for 9 undulators

19 bending magnet BL

4 sc WLS BL

44 BL in total – every fifth week a new BL at BESSY



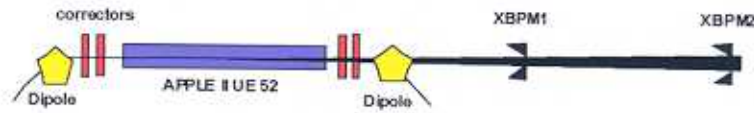
Section	ID
L1	7 T WLS-1
H1	U125-2
L2	7 T wiggler
H2	UE56-1
L3	4 T WLS
H3	U49 / U180
L4	UE49
H4	UE52
L5	UE46
H5	U139/UE56-2
L6	U41
H6	U125-1
L7	7 T WLS-2
H7	U49-2
L8	RF
H8	Injection



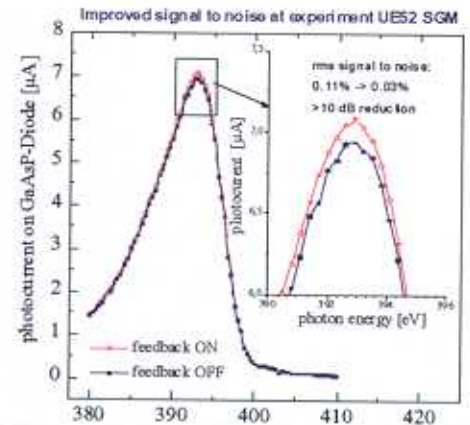
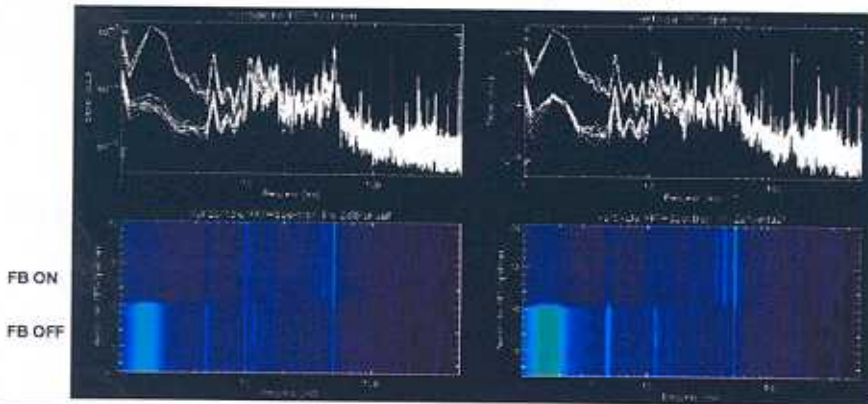
# Orbit Stability

## Fast Local Orbit Feedback

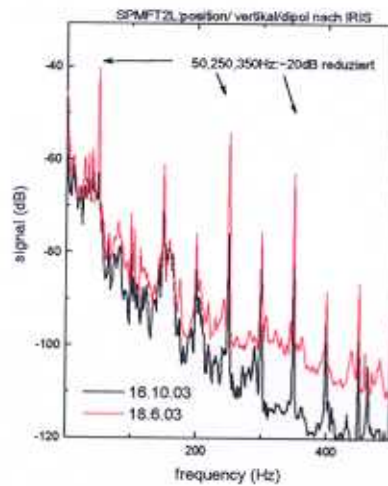
M.Ruttorf, R.Goergen, K.Holldack, F.Senf ...



XBPM 2 position magnitude [1.3 mm/Sqrt(Hz)]



## Improvement of Corrector Power Supplies- Strong Suppression of Mains Harmonics



## Beamline: Active Mirror Feedback (SRI '03)

## Superconducting Wavelength Shifter

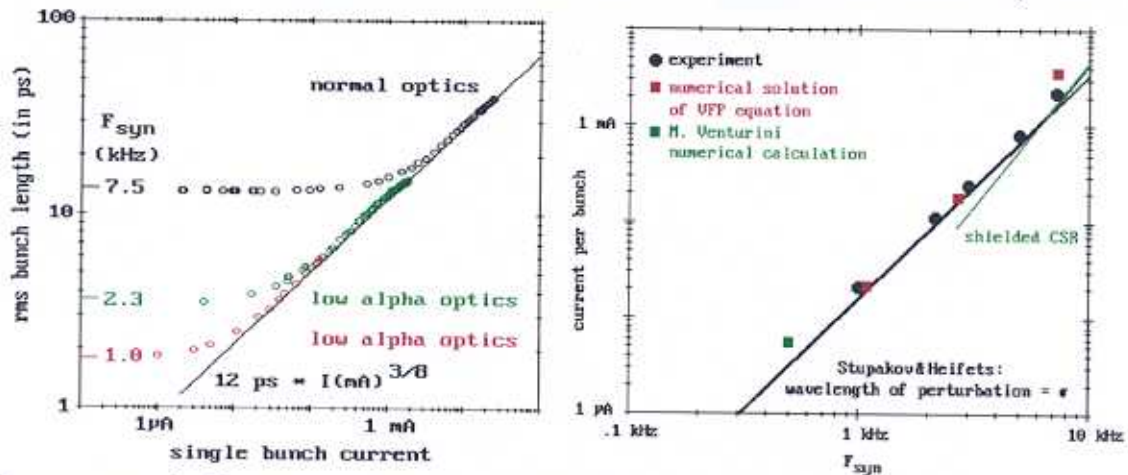
Installation of central cryoplant with connections to all 4 WLS  
Problem LHe pressure variations with impact on orbit.  
Vertical 1.6 Hz orbit distortion from local re-condensers.

New vertical chamber for 7 Tesla multipole Wiggler.

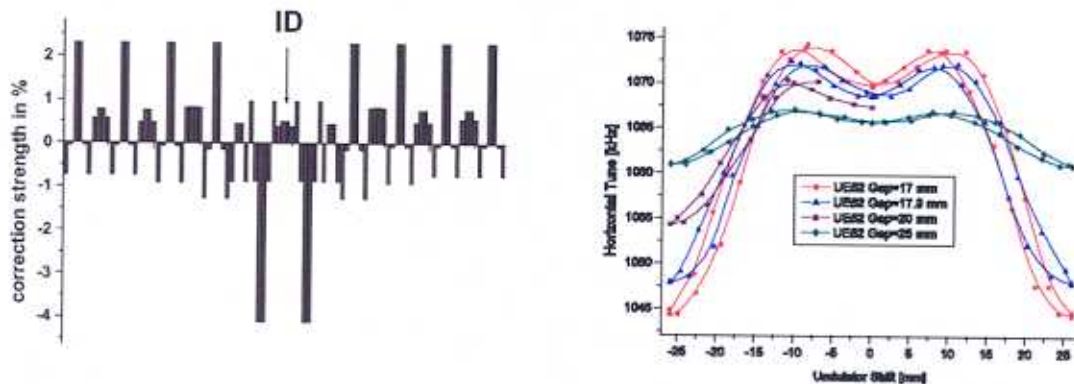


# Machine Studies

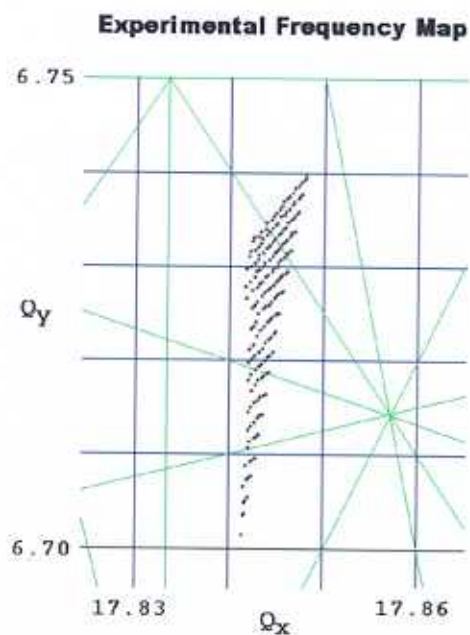
Low alpha studies, short bunches, CSR instabilities (PAC '03)



Improved Compensation of ID Focussing (PAC '03)



Frequency Maps

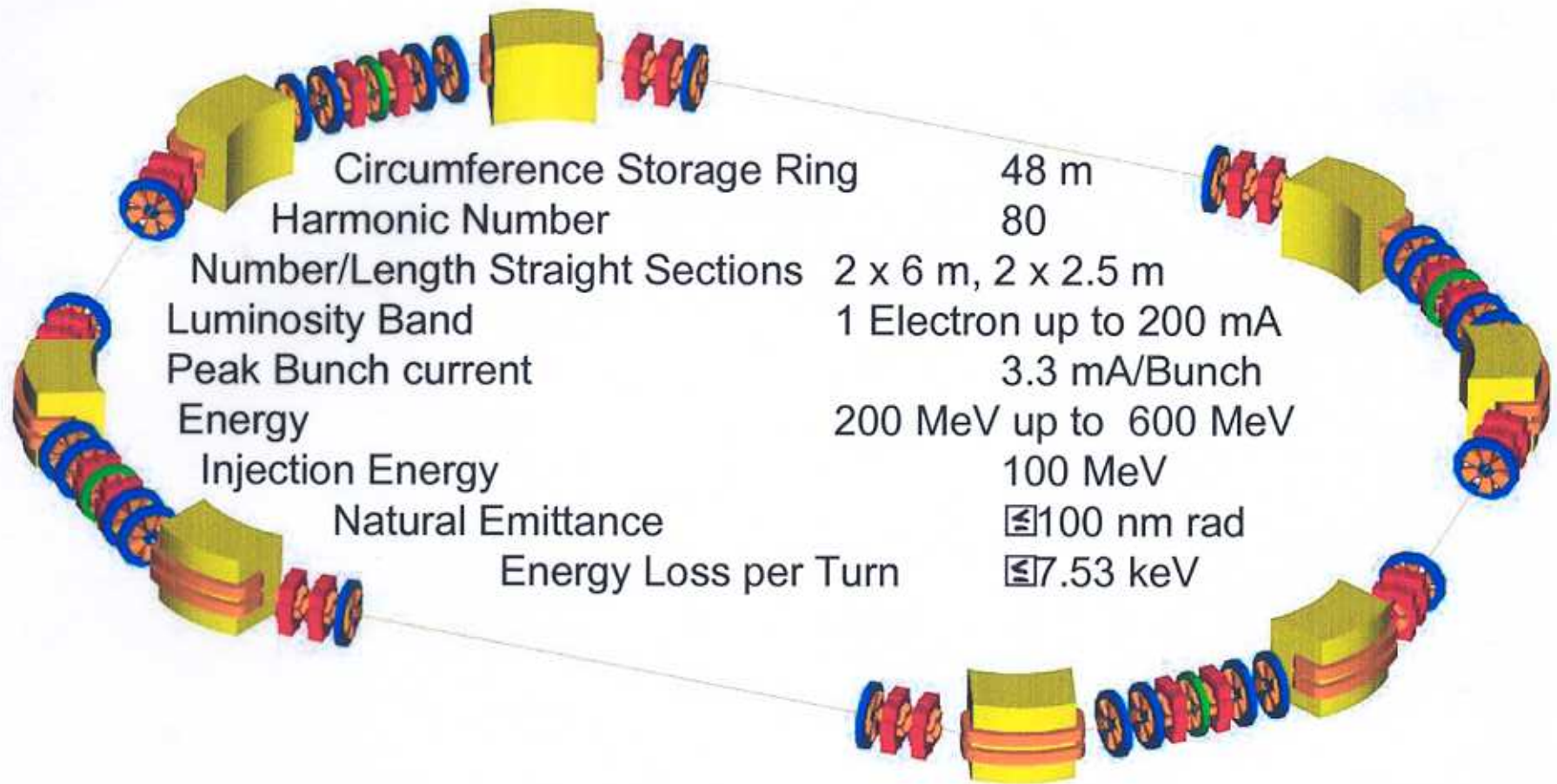






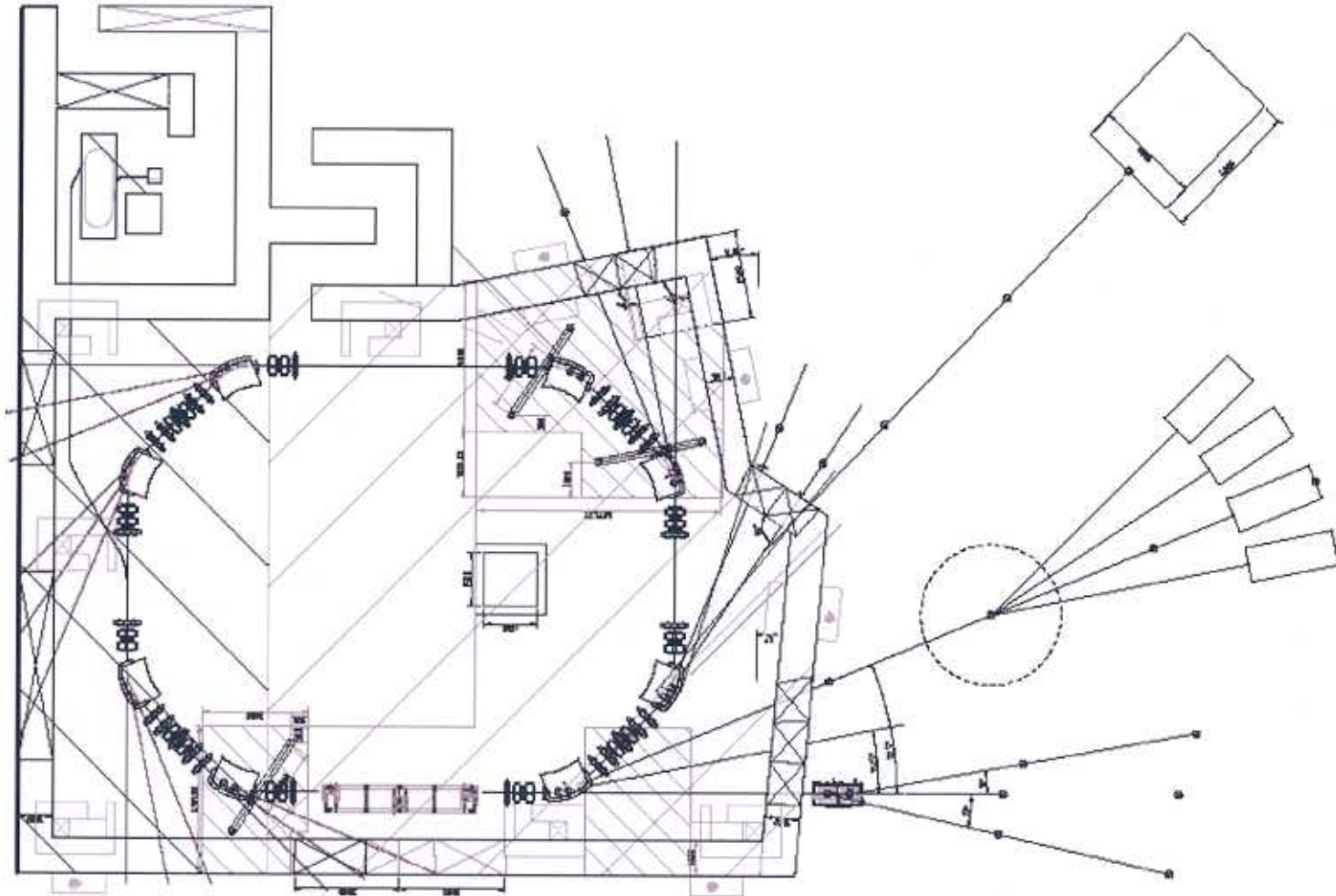


# Metrology Light Source at Willy Wien Laboratory of the PTB





# Metrology Light Source at Willy Wien Laboratory of the PTB Layout Experimental Hall and Light Source

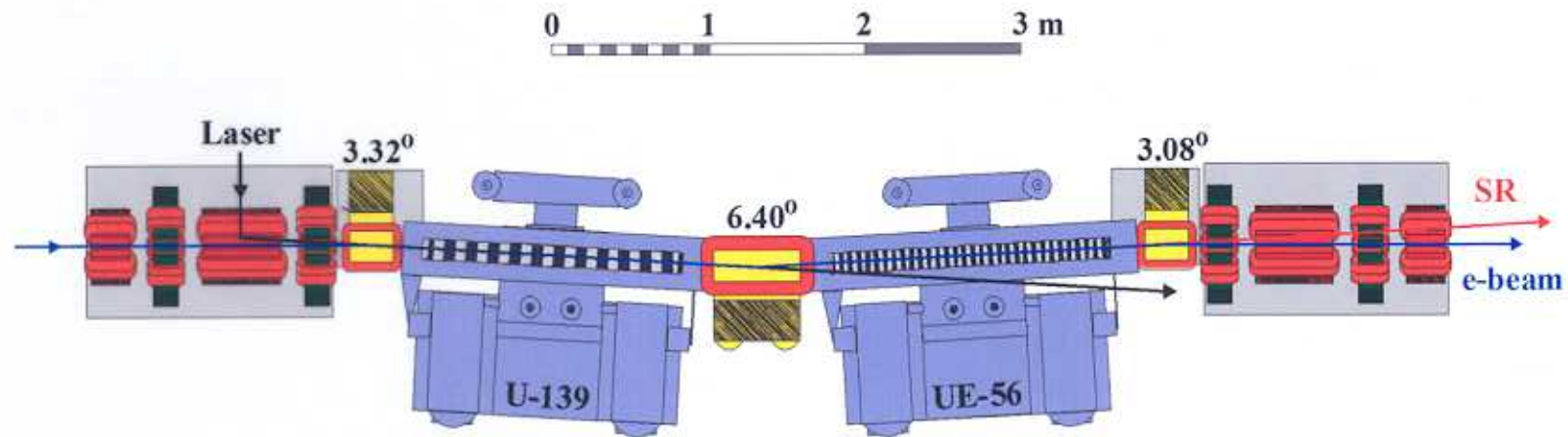


November 2003

BESSY MLS Team

## BESSY implementation

top view



use existing elliptical undulator UE-56/1 (two modules)

put downstream module on new support structure (done)

install a new planar undulator U-139 and 3 dipole magnets



## Ongoing and Future Projects

**TDR BESSY FEL**

**PTB-Ring** – 200-600 MeV Metrology Light Source for UV, EUV, and coherent THz-radiation

**Fs Slicing** (S. Khan) – first experiments summer 2004

**SC higher harmonic cavity** – delivery this year, installation next year?

**“Superbends”** – Prototype will be delivered beginning of next year