



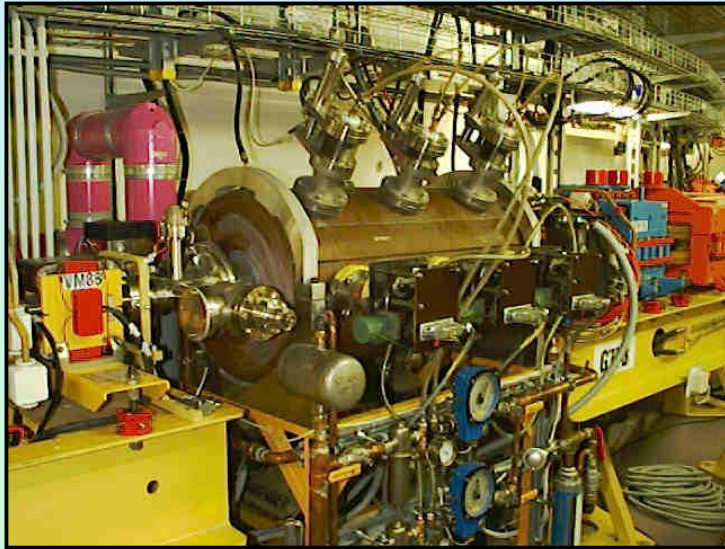
Status BESSY II & Operation of HOM Damped NC Landau Cavities

content:

- change of booster cavity
- 500 MHz transmitter for cavity tests
- operation of HOM damped nc landau cavities
- status of sc HOM damped landau cavity

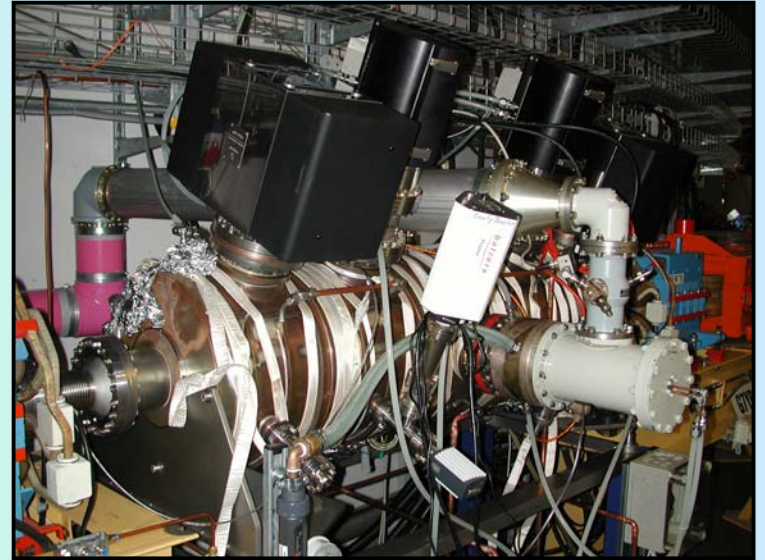
Status BESSY II & Operation of HOM Damped NC Landau Cavities

change of booster cavity in shutdown october 2002



3-cell DESY type cavity

- bad vacuum condition
- bad ceramic window mechanics



5-cell PETRA type cavity

- good vacuum conditions
- approved loop coupler

Status BESSY II & Operation of HOM Damped NC Landau Cavities

500 MHz transmitter for cavity tests



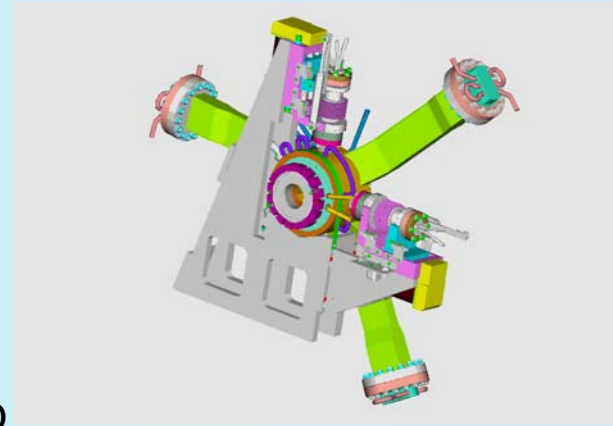
20 year old transmitter rebuild

- frequency: 500 MHz
- power: 30 kW cw
- independent of SR operation
- test of cavities (HOM-damped EU project)
- conditioning of spare parts (coupler, plunger)

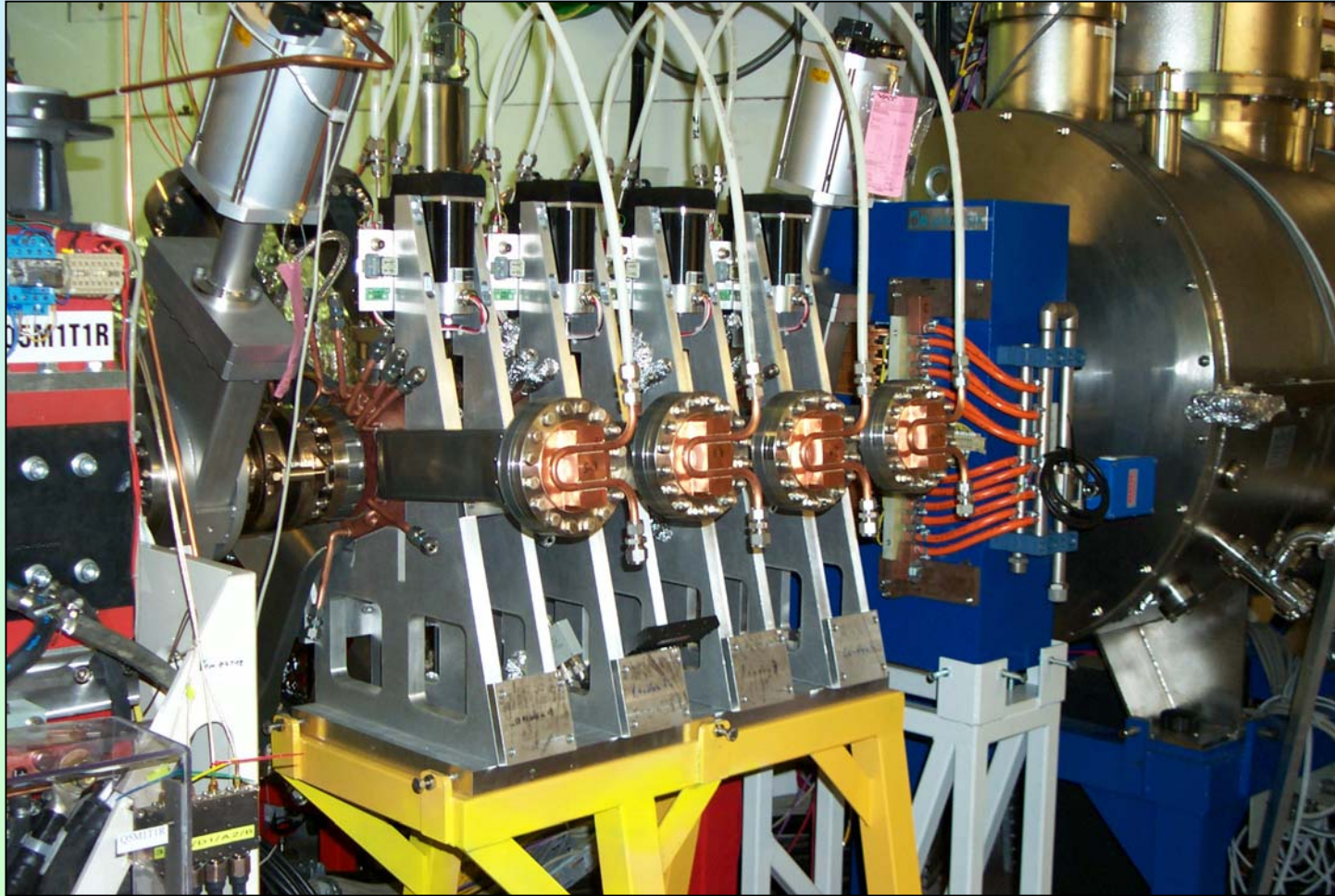
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NC HOM damped Landau Cavities

- 1499 MHz = 3rd harmonic of rf frequency
- 4 cavities installed in 3/2002
- 3 waveguide HOM dampers with in vacuum ferrite
- operation modes: lengthening, shortening, parking
- typical operation voltage 50-60 kV each voltage loop
- typical power 1.5-2 kW each
- typical bunch lengthening 30%
- typical increase of lifetime 20%
- no modes on beam
- no problems in operation
- many problems during production at company SDMS
- shunt impedance 850 kOhm (1.7MOhm)
- $R/Q = 62 \text{ Ohm}$
- $Q_{\text{fundamental}} = 14\ 000$
- Q value TM011 mode ~ 120
- highest Q value TE mode 1.87GHz ~ 1300



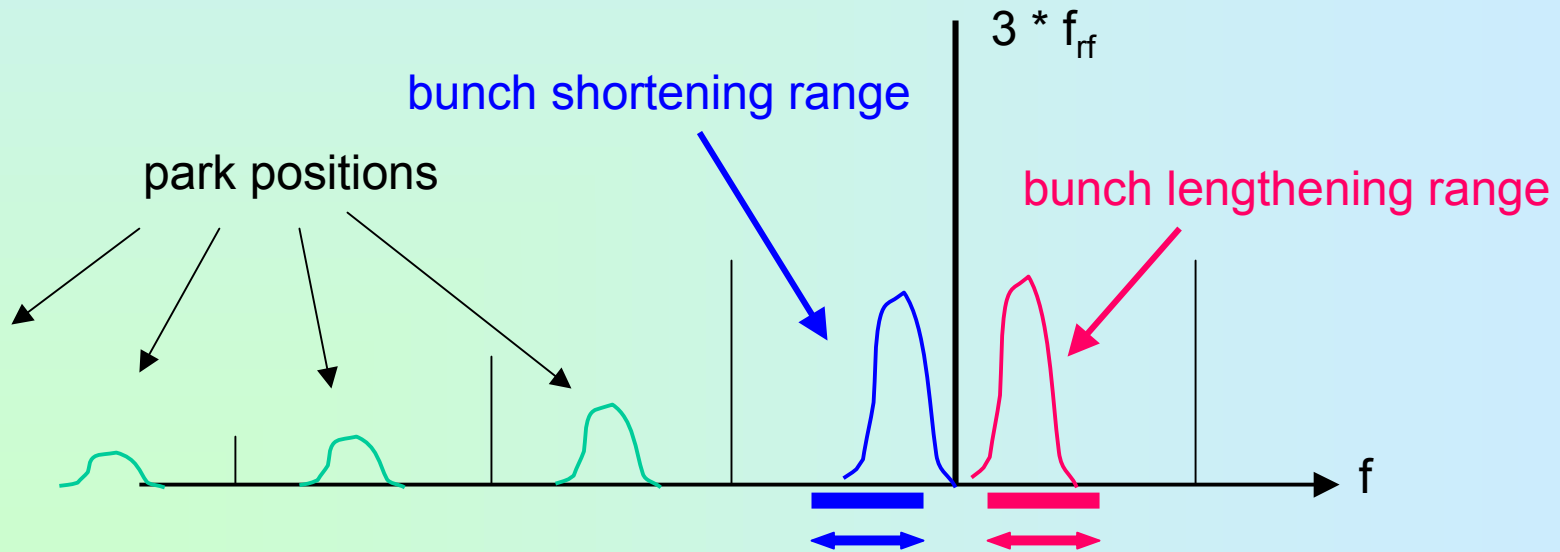
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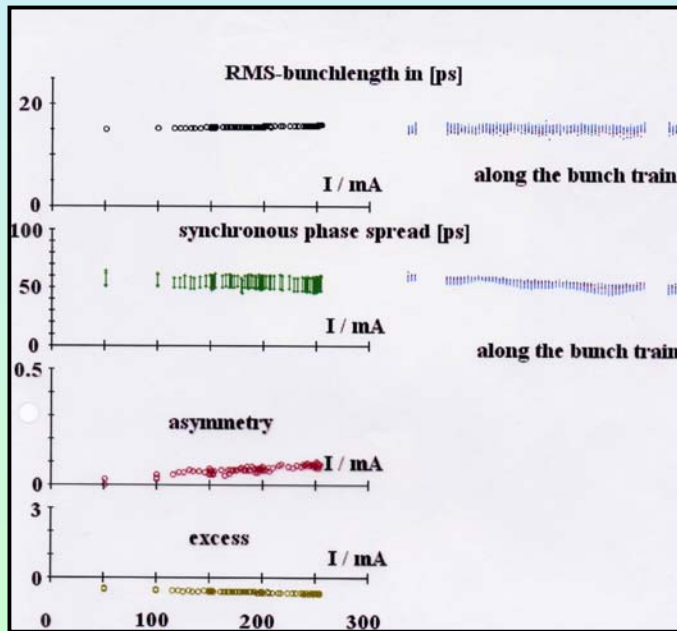
tuning of landau cavities

- voltage loop lengthening dedicated plunger **position range**
- voltage loop shortening dedicated plunger **position range**
- parking position every cavity own frequency

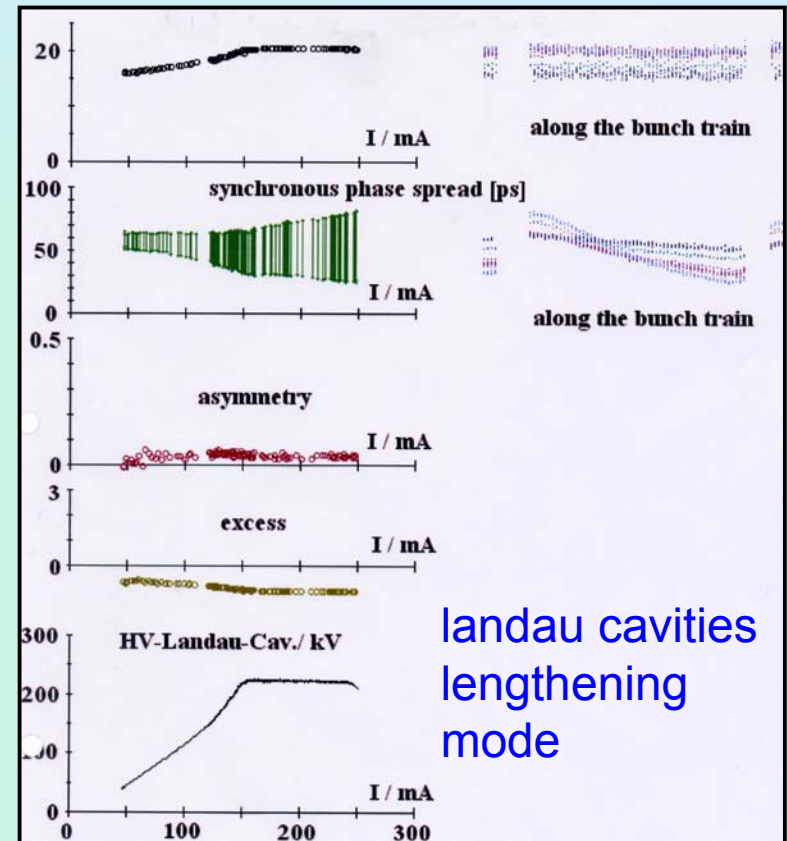


Status BESSY II & Operation of HOM Damped NC Landau Cavities bunch length streak camera measurements

by Peter Kuske

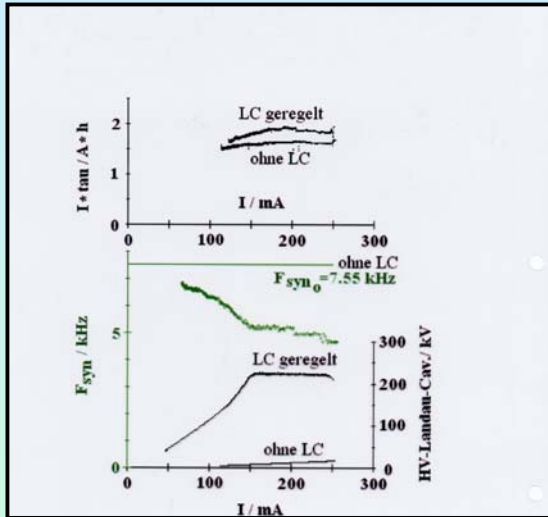


landaus parking position

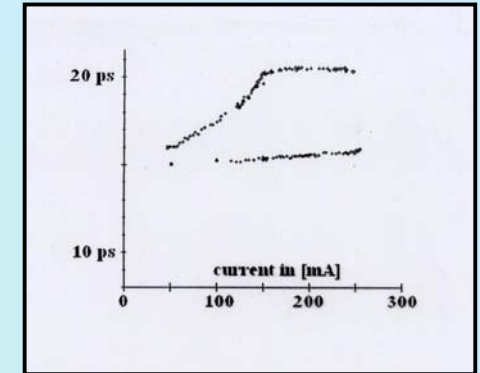


landau cavities
lengthening
mode

Status BESSY II & Operation of HOM Damped NC Landau Cavities



synchrotron frequency
fit to bunchlengthening
data



user operation with/without landau cavities

lifetime scale: 5-15 h

landau voltage: scale 0-80 kV

3x55 kV 1x60 kV

current scale: 0-300 mA

rf voltage: 1300 kV

