

# Commissioning Phases

The commissioning can be divided into seven phases:

- *Phase 1 – Linac, booster and transfer line commissioning*
- Phase 2 – First-turn in storage ring
- Phase 3 – Second-turn and multi-turn
- Phase 4 – Accumulation, basic feedbacks and linear optics
- Phase 5 – Nominal beam current with advanced settings and feedbacks
- Phase 6 – Insertion device and collimator setup, making first photon beams
- Phase 7 – Finalization



# Commissioning Phases and Shifts

Distribution of shifts (5\*12h day shifts / week) over the different phases :

- Phase 2 – 1 (+3)
- Phase 3 – 1
- Phase 4 – 8 (+3) → setting up of safe and emergency beam dump
- Phase 5 – 15 (+5) → most critical phase reaching nominal beam current
- Phase 6 – 9
- Phase 7 – 10

Phase 4: <100 mA dumped slowly with MBFB or fast kicker

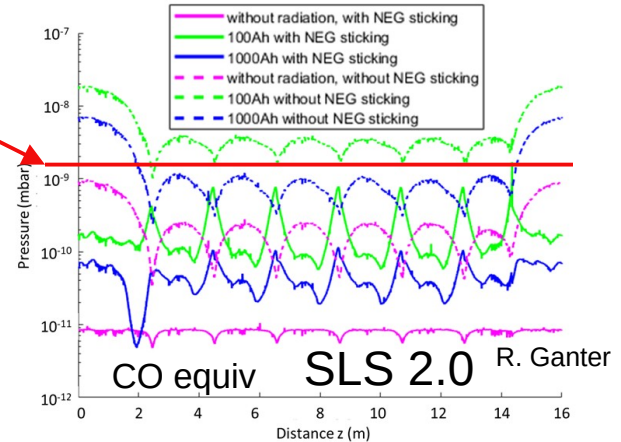
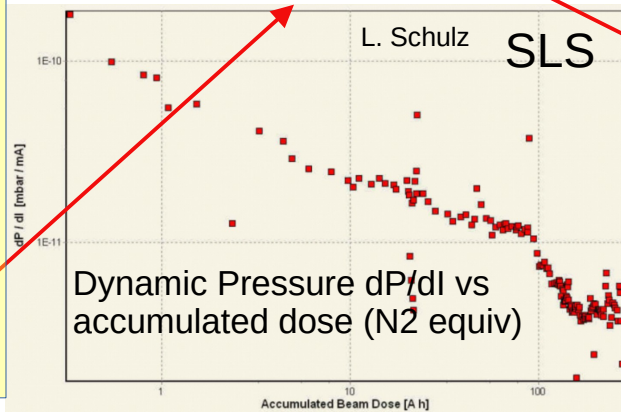


In 2001 the dose of 100 Ah was needed for the vacuum conditioning of SLS (Target:  $2 \cdot 10^{-9}$  mbar):

→ In total 44 (+11) shifts corresponding to 11 weeks (~3 months)

→ Assuming 30 night shifts (6 weeks) at 400 mA

→ accumulated 144 Ah



Expecting same  $dP/dl$  for SLS 2.0 !

# High & Intermediate level BD applications for SR commissioning

- P2: Measurement of injected beam trajectory (\*)
- P2-3: Beam Threading and BPM offset discrimination
- P4: Lifetime Measurement (IPCT / Loss Monitors)
- P4: Tune Measurement / Adjustment \*
- P4: Dispersion & Chromaticity Measurement & Correction \*
- P4: Emittance Measurement (Controller) (\*)
- P4: BBA Beam-Based Alignment (Slow (>P7: Fast)) (\*)
- P4: BBGA Beam-Based Girder Alignment \*
- P4: Optics correction (LOCO/Quad Variation/Turn-by-Turn) \*
- P4: Orbit Correction (SOFB (P5: FOFB)) inc. frequency \*
- P4: Nonlinear Optimizer → DA and lifetime \*
- P6: Insertion Device Feed-Forward (orbit / optics) \*

Phase 4 (P4) ~ 3 months

- The applications have to bring us through the commissioning phases 2-6.
- Consolidation does not have a priority.
- Applications will change during the commissioning while we gain experience.
- We concentrate on the physics and find solutions.
- Applications requiring offline analysis are ok.



\* requiring model online or offline