Toroids & TPS

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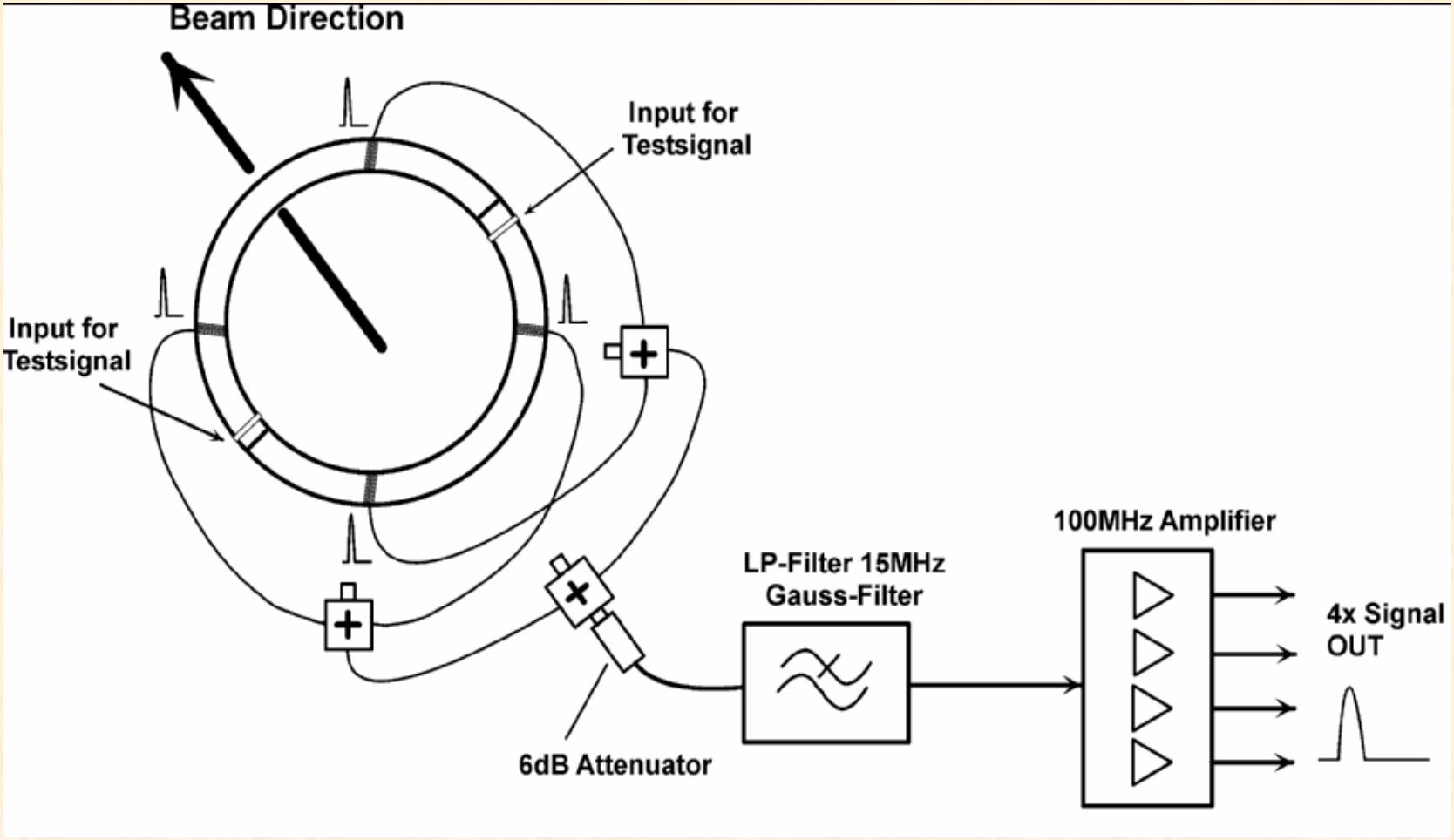
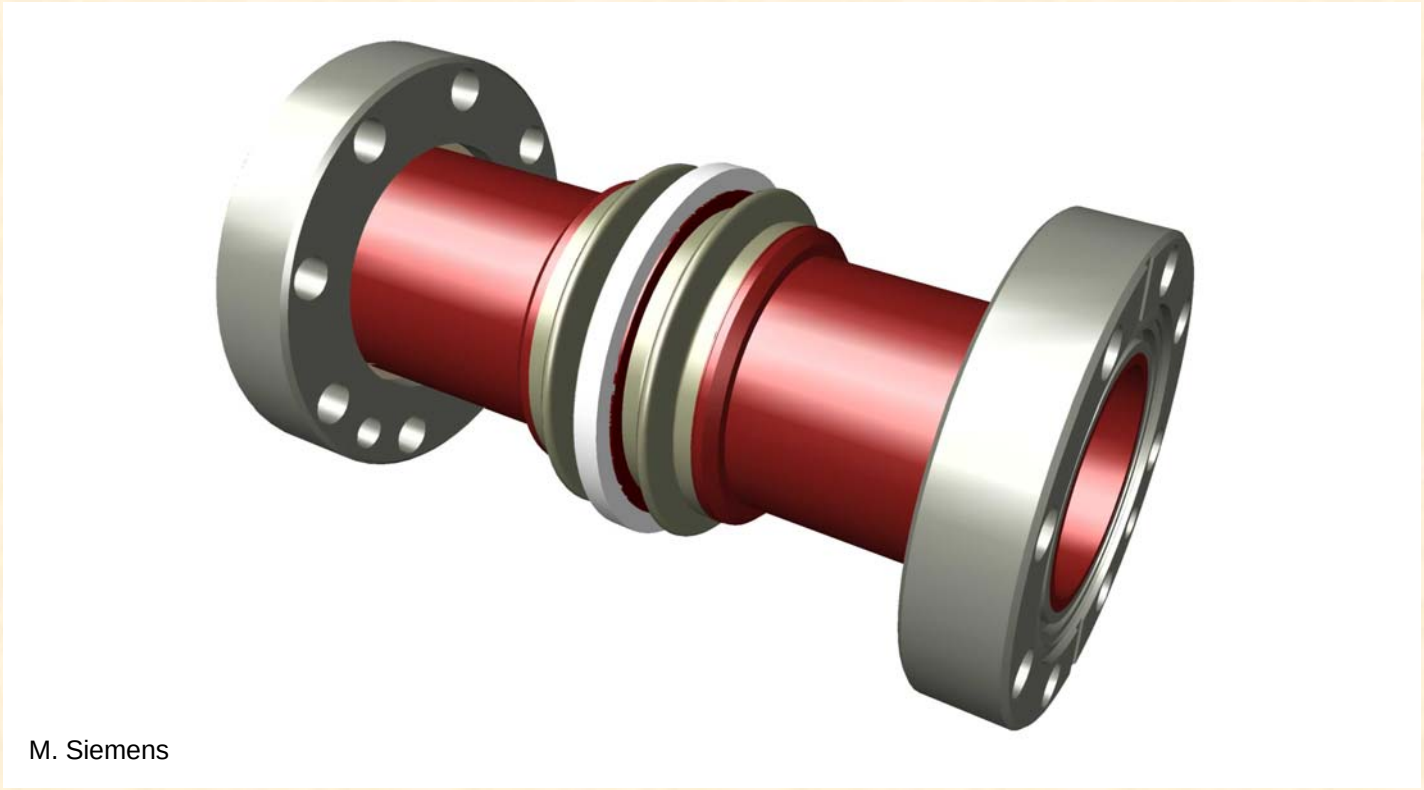
Pickup and Electronics in the Tunnel



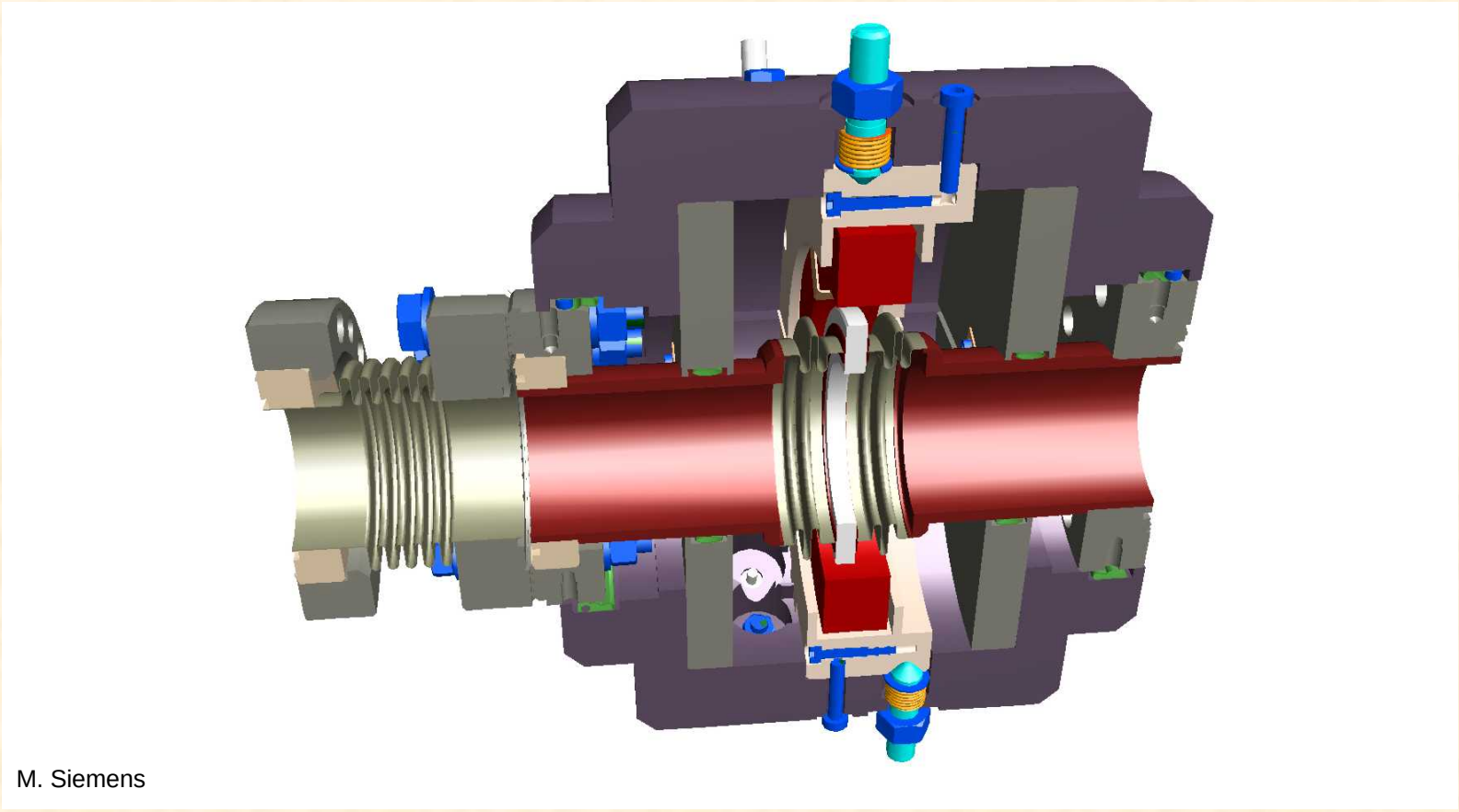
Toroid Vacuum Chamber



M. Siemens

3D picture of the ceramic chamber for the toroids

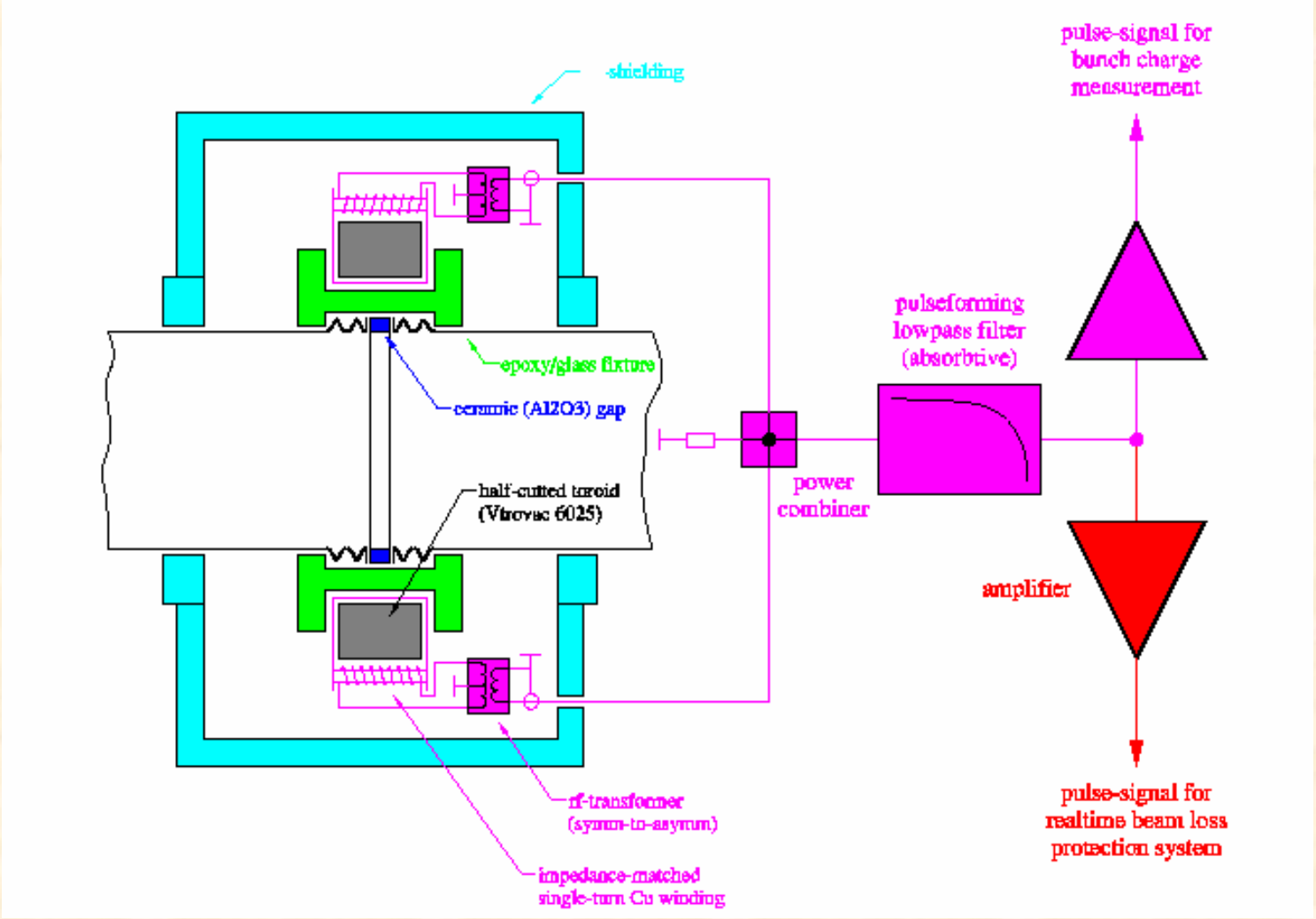
Sectional Drawing



M. Siemens

Cut through a 3D picture of a completely assembled toroid

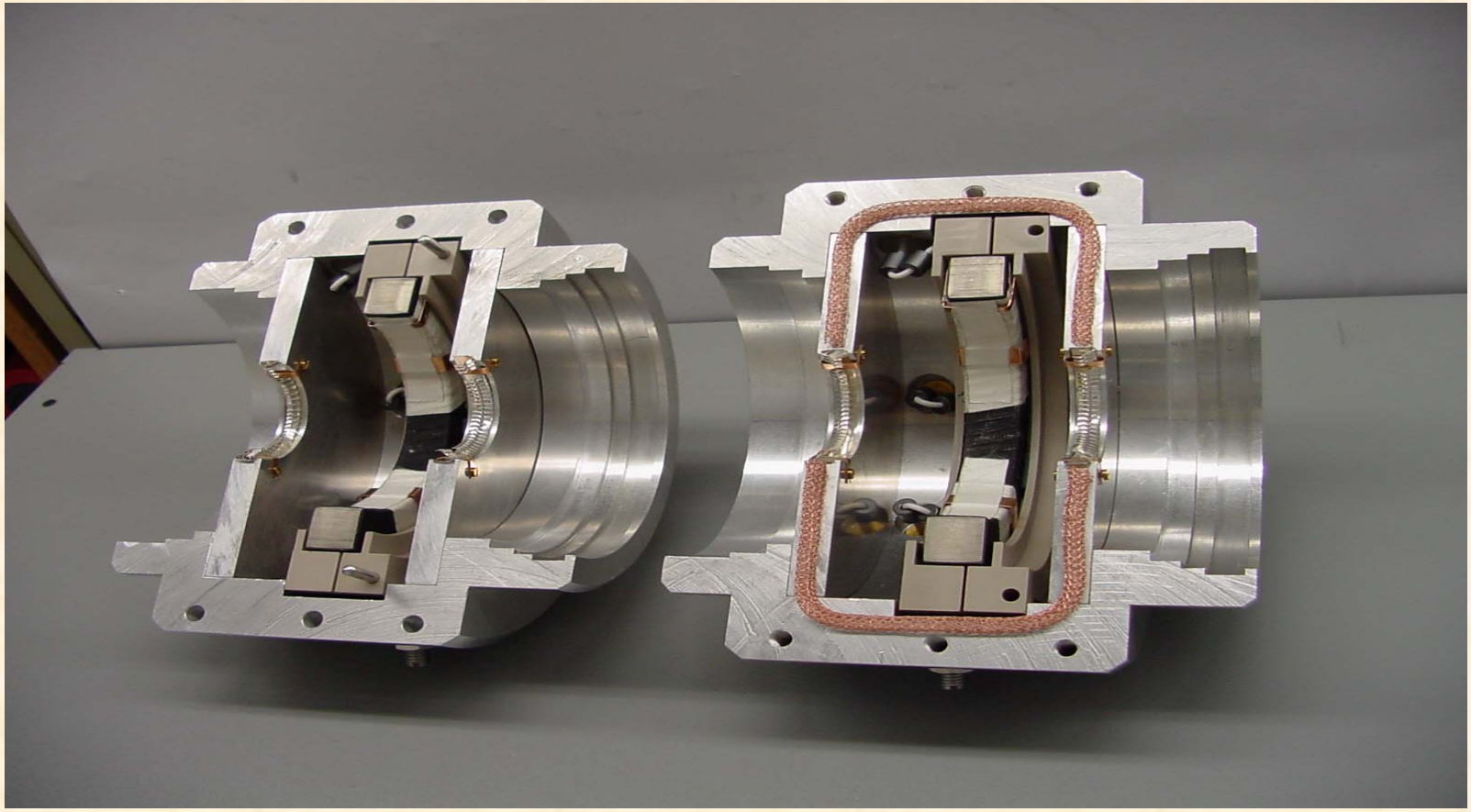
Scheme of Tunnel-Hardware



Both Halfcores

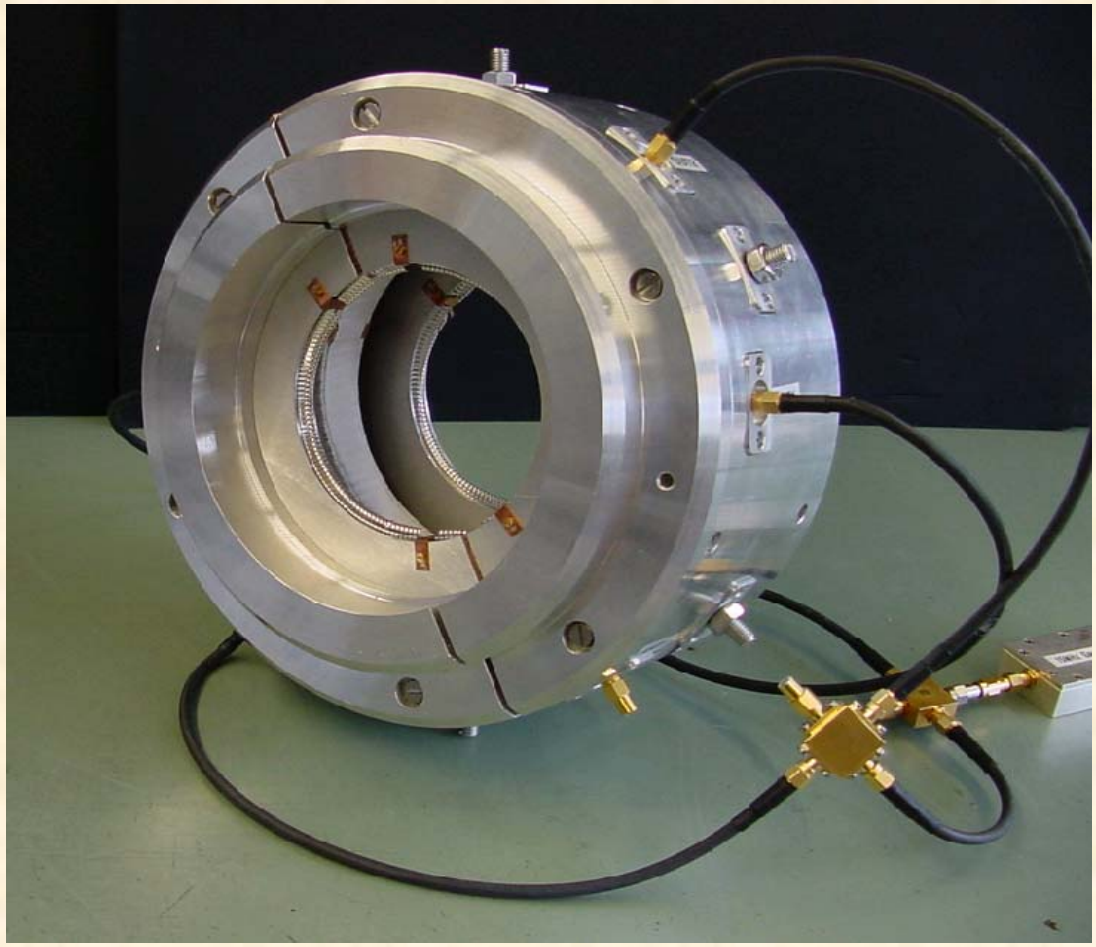
Fully equipped beam transformer halfcores

Split Pickup Electrode



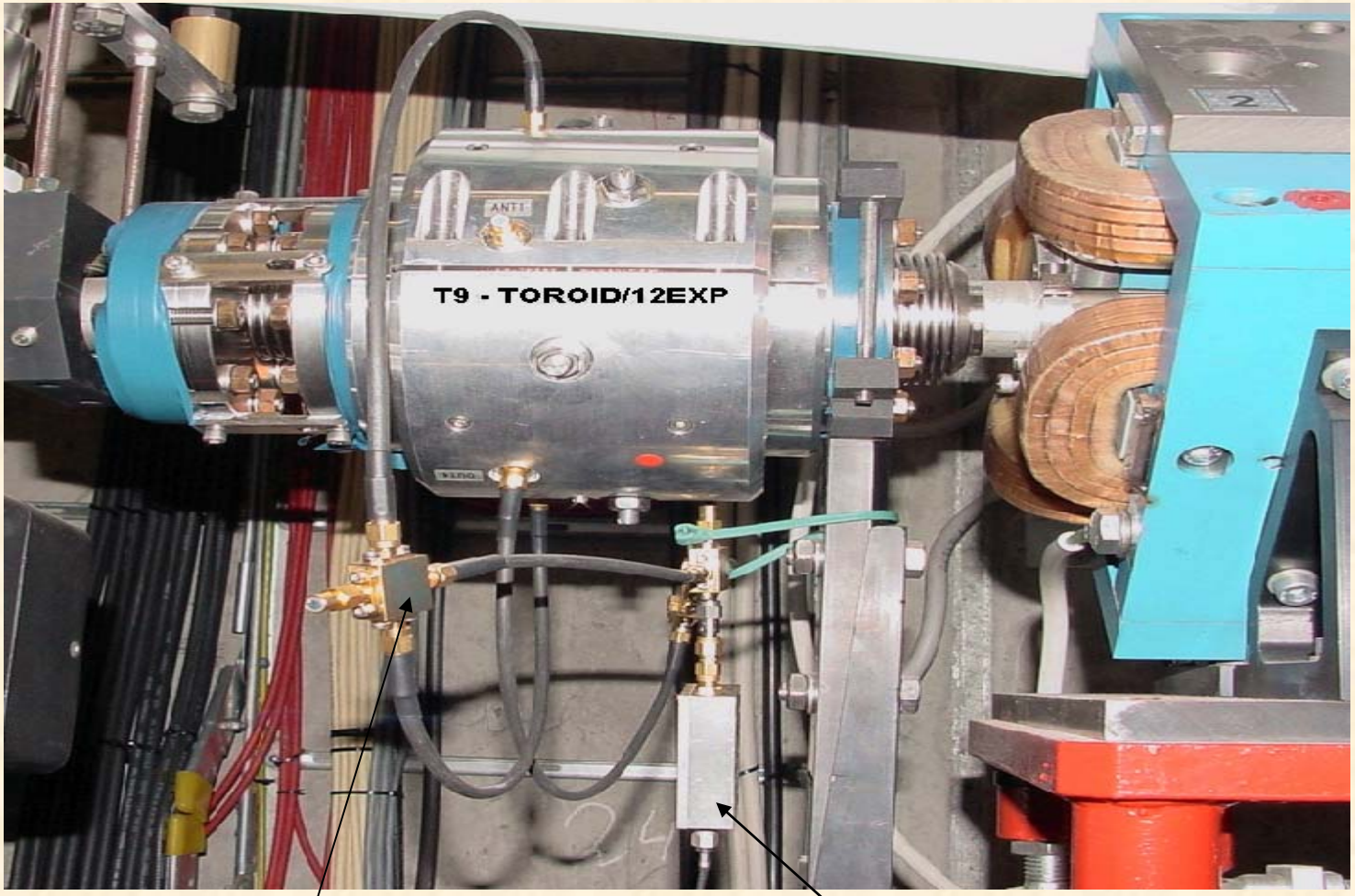
Transformer halfcores embedded in shielding halfcovers

Toroid/9DUMP for FLASH



Complete, with cables, combiner and filter

Toroid in FLASH

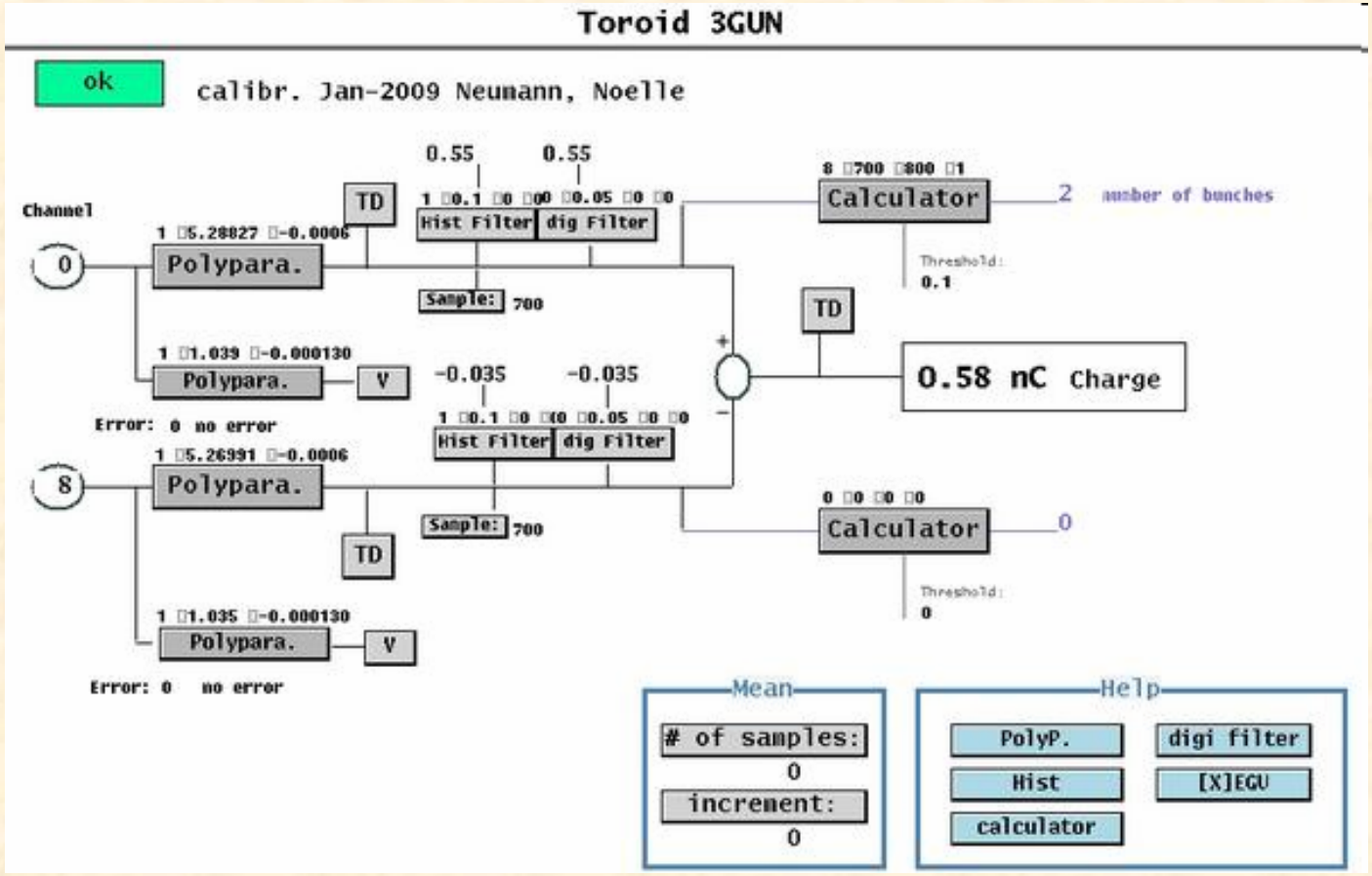


Toroid Calibration

- Calibration with pulser
  - In Lab on test bench
    - Antenna in the center of the transformer
    - Test loop
      - $\Rightarrow$ Calibration constant for each toroid!
  - In FLASH tunnel
    - Test loop

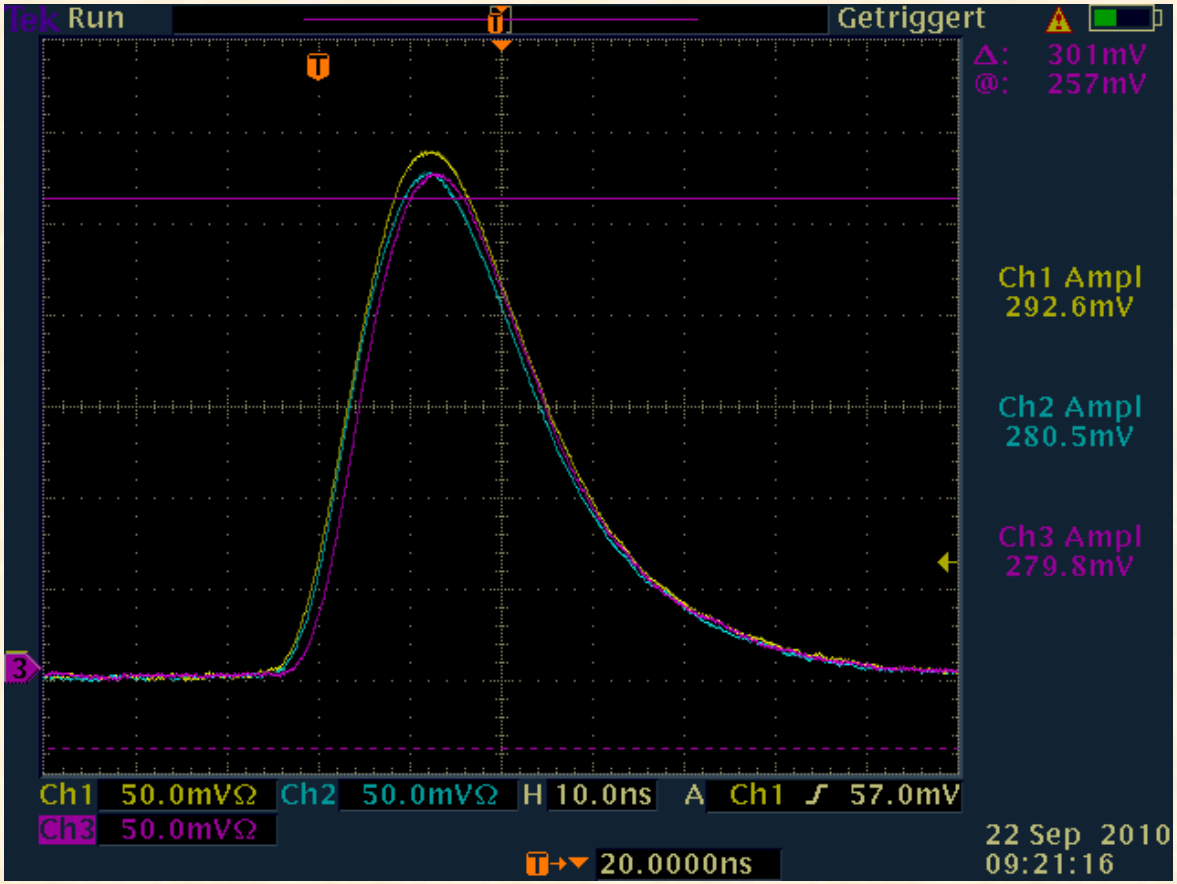
- Preliminary calibration with beam
  - Check the amplitude with scope
  - $\Rightarrow$ Adjust the DOOCS calibration factors
  - Need to redo with more stable charge

DOOCS ADC-Channels for Charge Reading from Toroid/3GUN

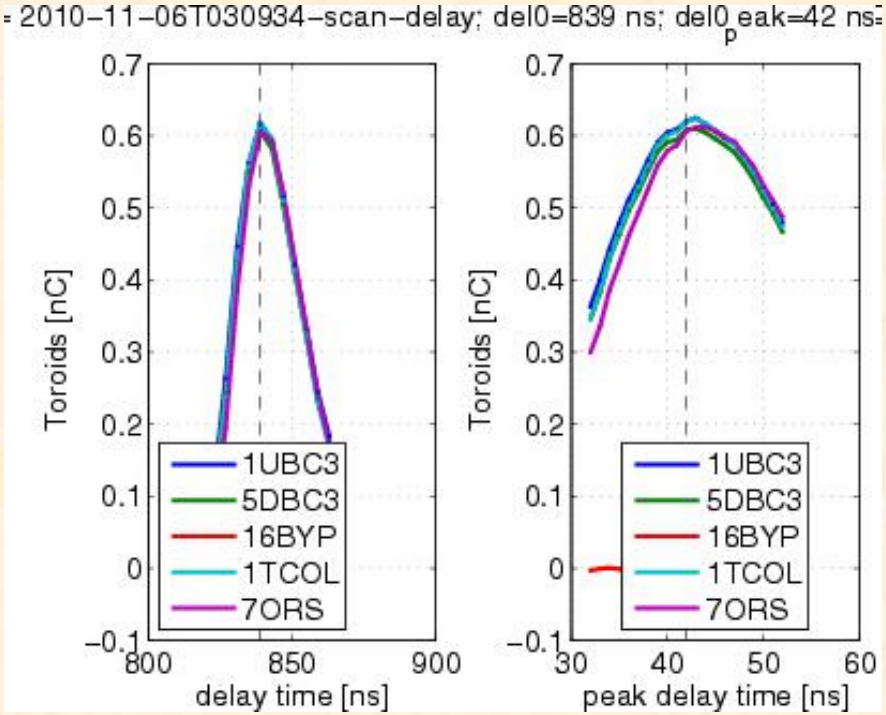


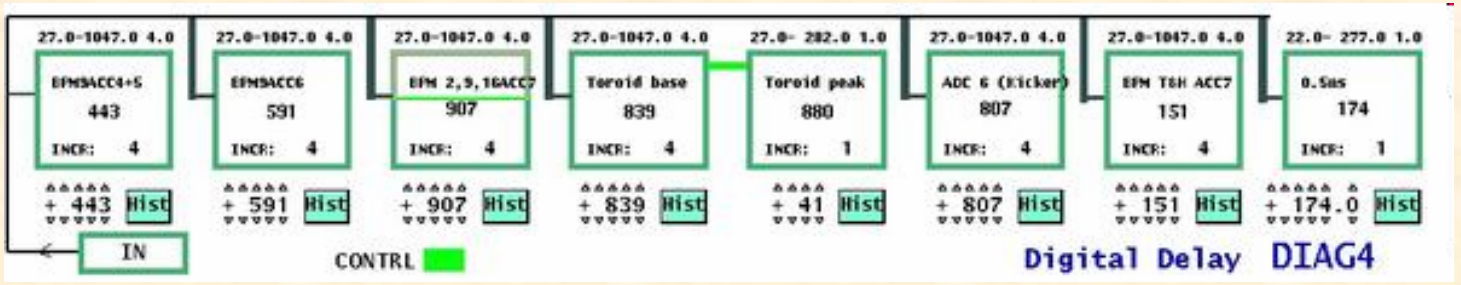
Toroids/ 11SMATCH, 12EXP, 9DUMP

measured with Scope in Geb. 49

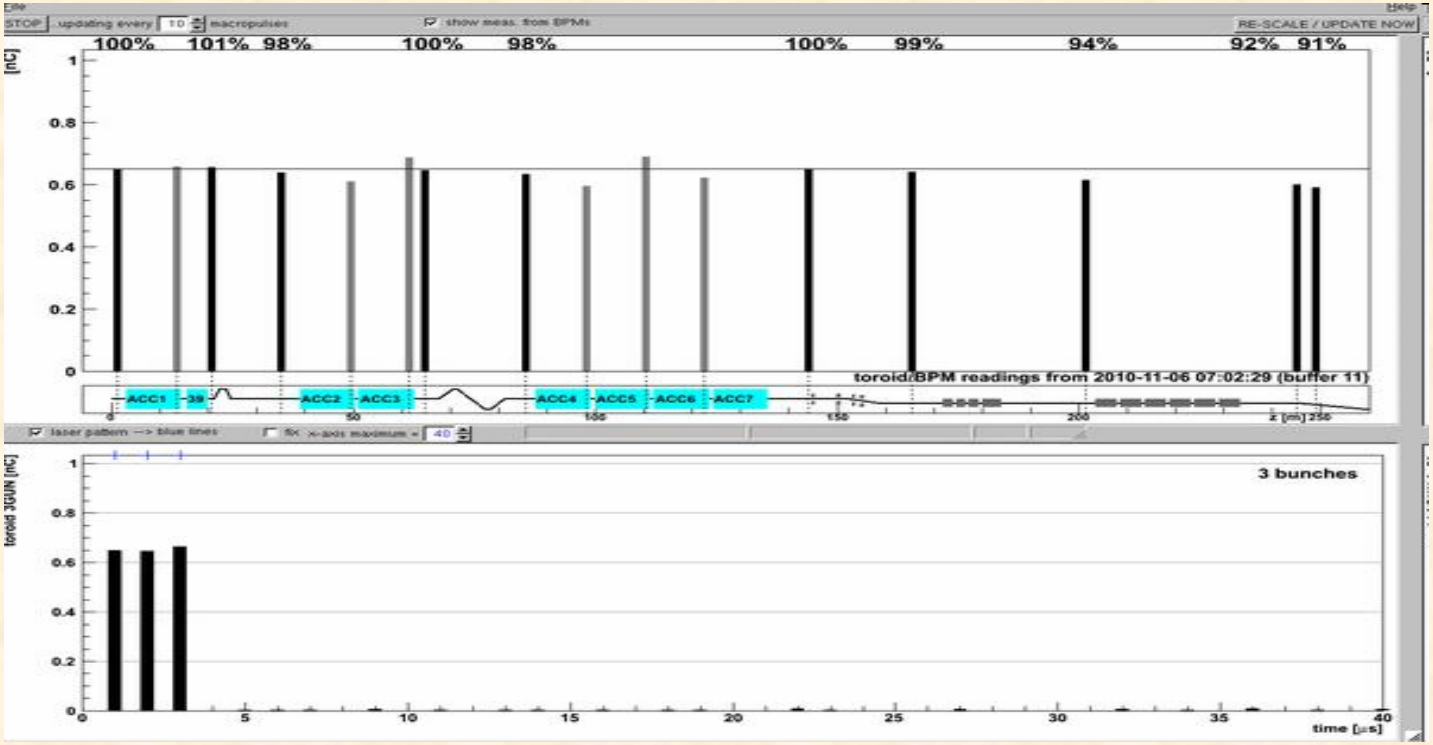


Toroid Timing Scan

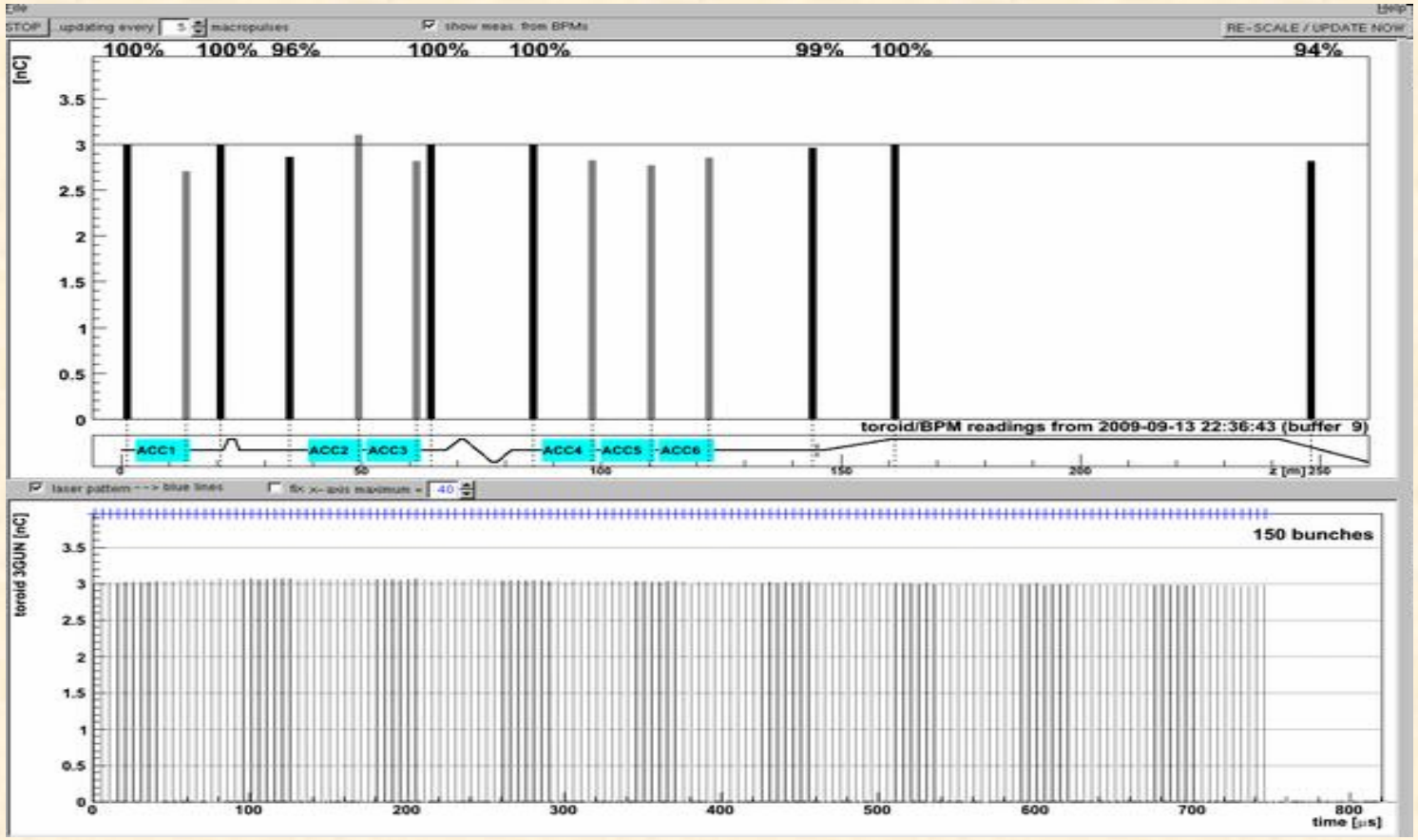




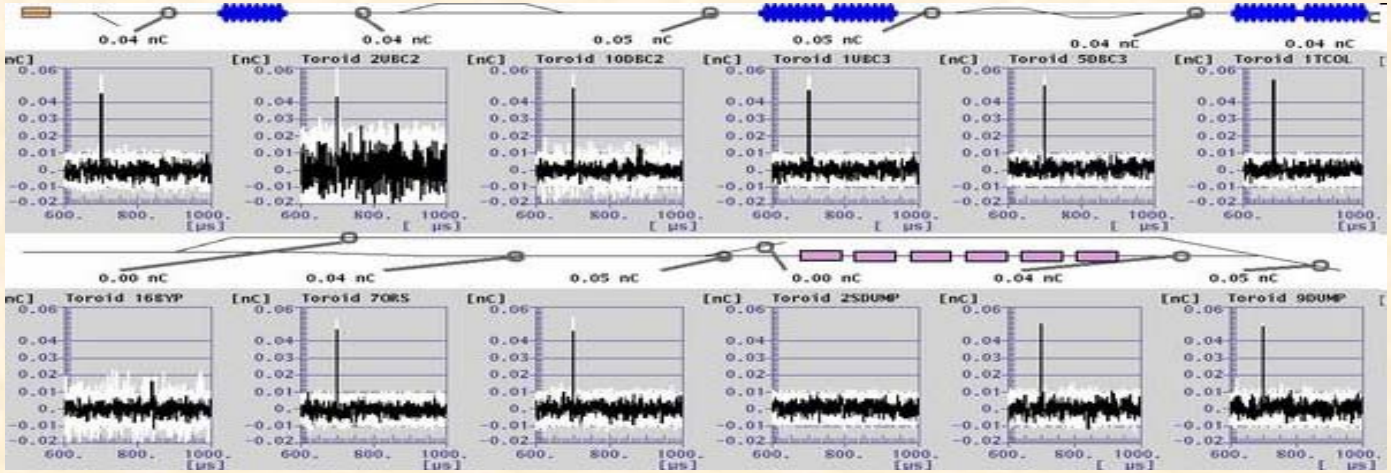
Toroid Charge Readings

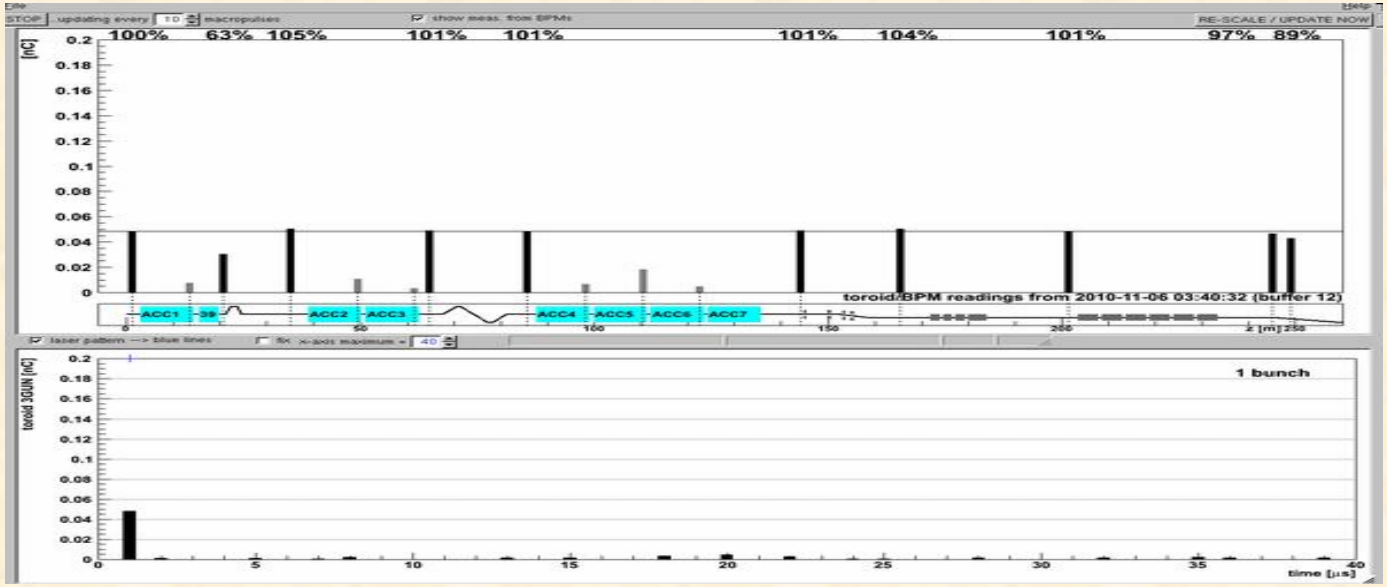


Toroid Charge(3nC) Readings in Sept. 2009

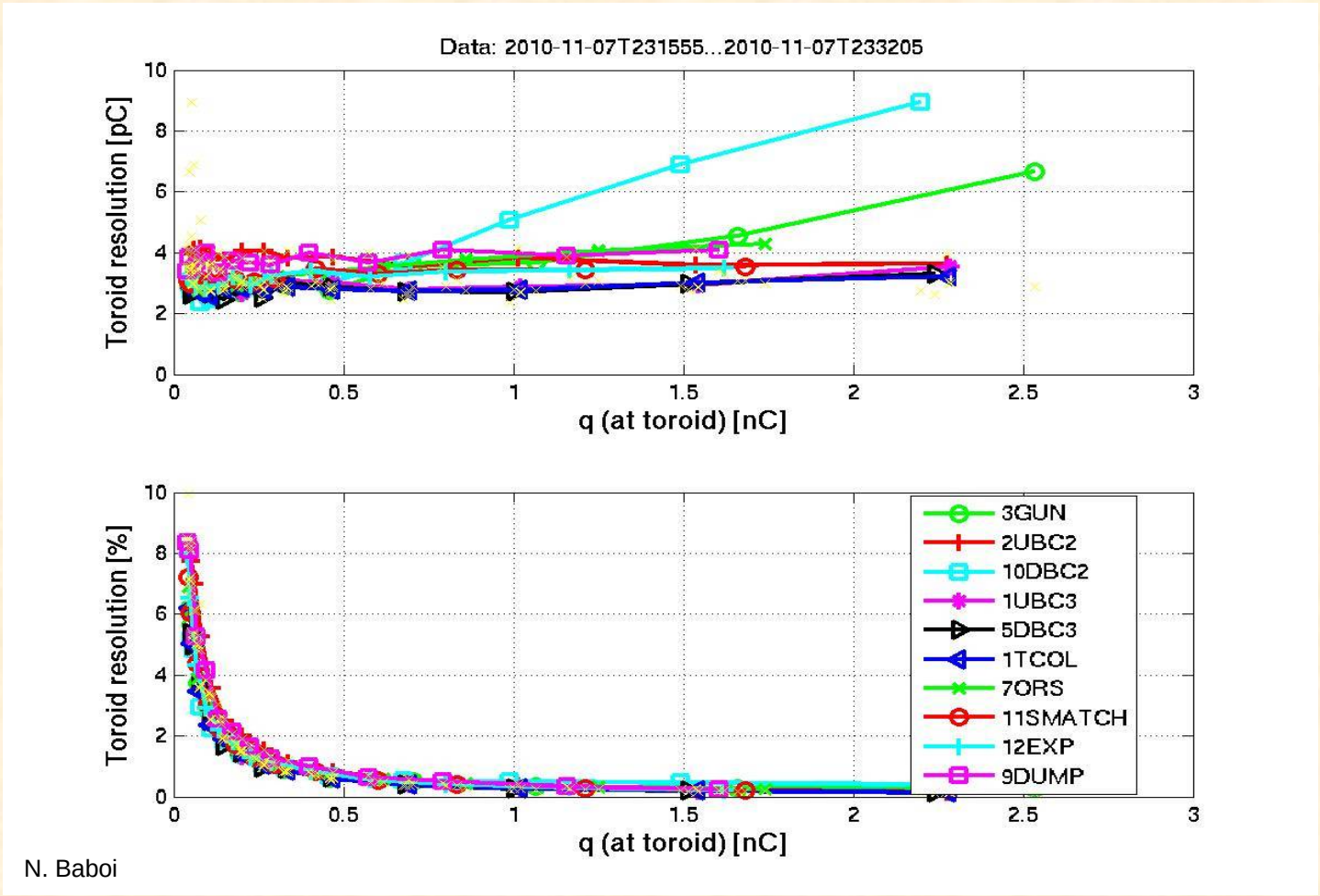


Toroid Charge(50pC) Readings in Okt. 2010





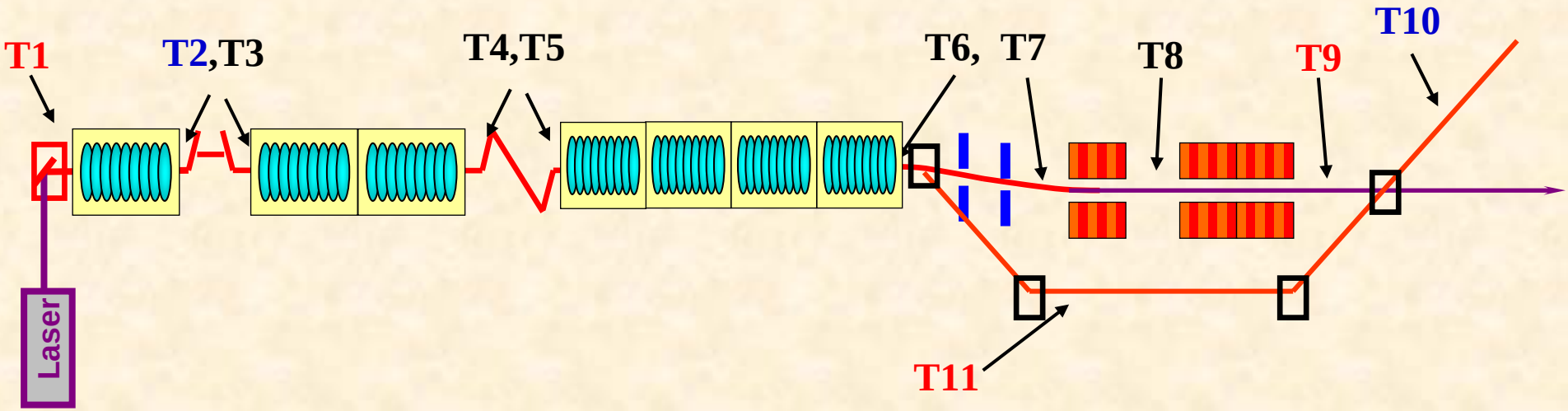
Toroid Resolution



N. Baboi

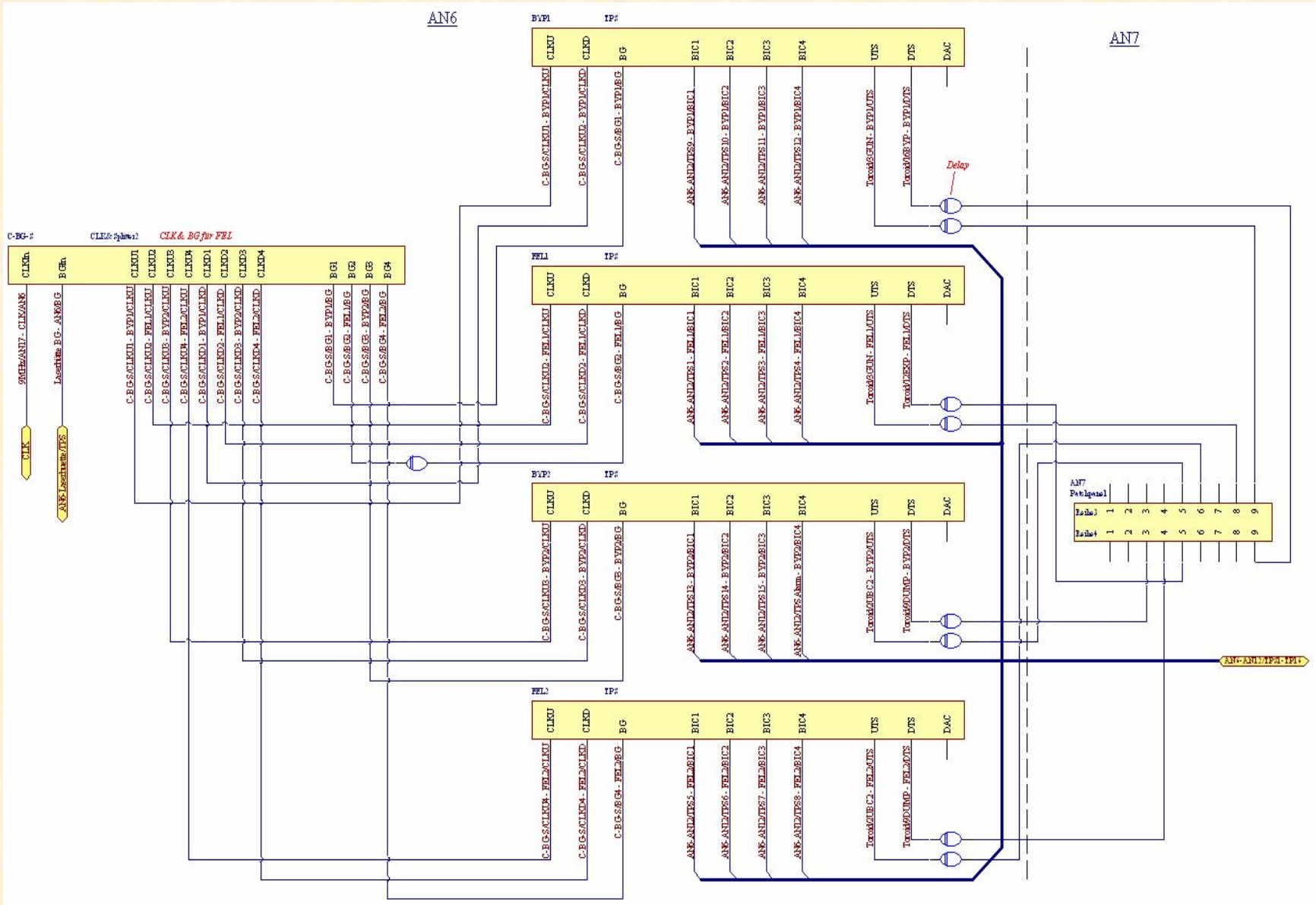
Comment: 10DBC2 = XFEL-Prototype

Transmission Based Protection System for FLASH (TPS)

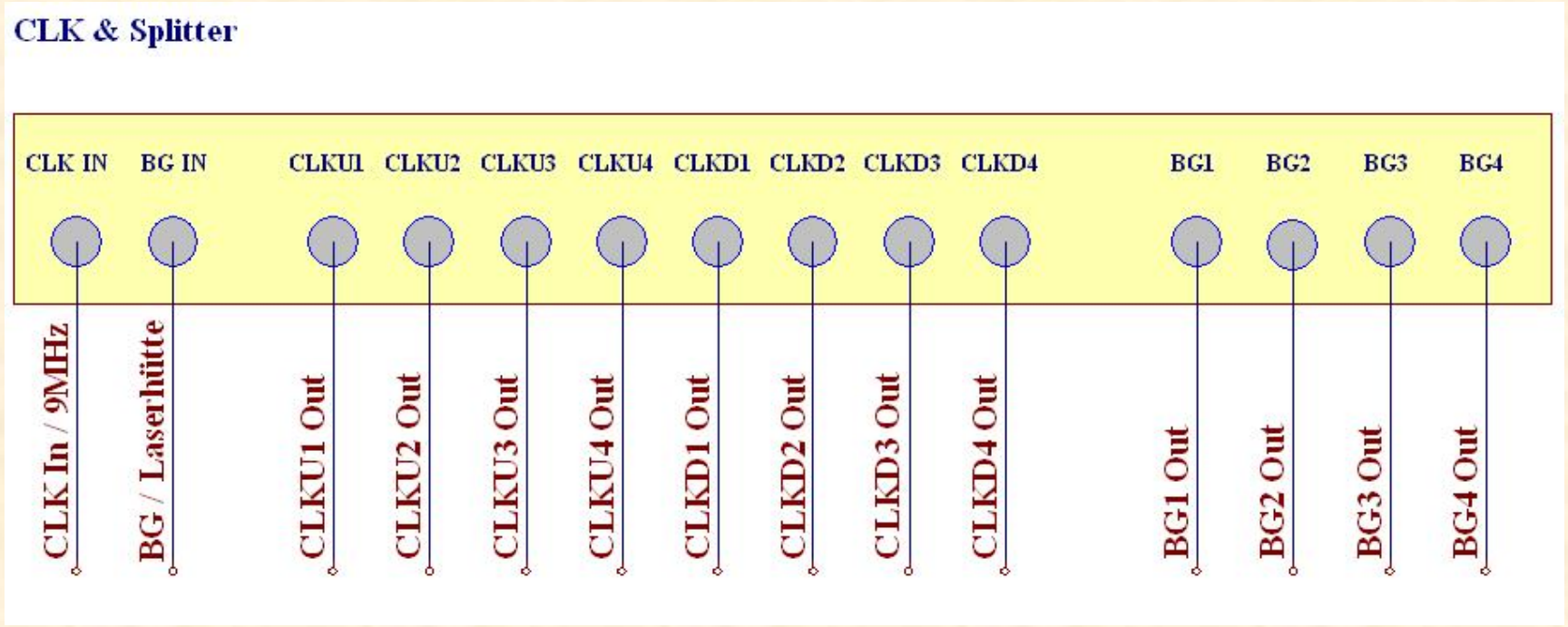


Tor.	Name	Z-Position	Toroid	Name	Z-Position	Comment
T1	Toroid/3Gun	1,25 m	T9	Toroid/12Exp	244,97 m	FEL Beamline, total length
T1	Toroid/3Gun	1,25 m	T11	Toroid/16Byp	161,254 m	Bypass Beampath, total length
T2	Toroid/2UBC2	20,548 m	T10	Toroid/9Dump	Ca. 248,9 m	Make sure beam reaches the dump (FEL Beamline)
T2	Toroid/2UBC2	20.548 m	T10	Toroid/9Dump	Ca. 248,9 m	Make sure beam reaches the dump (Bypass)

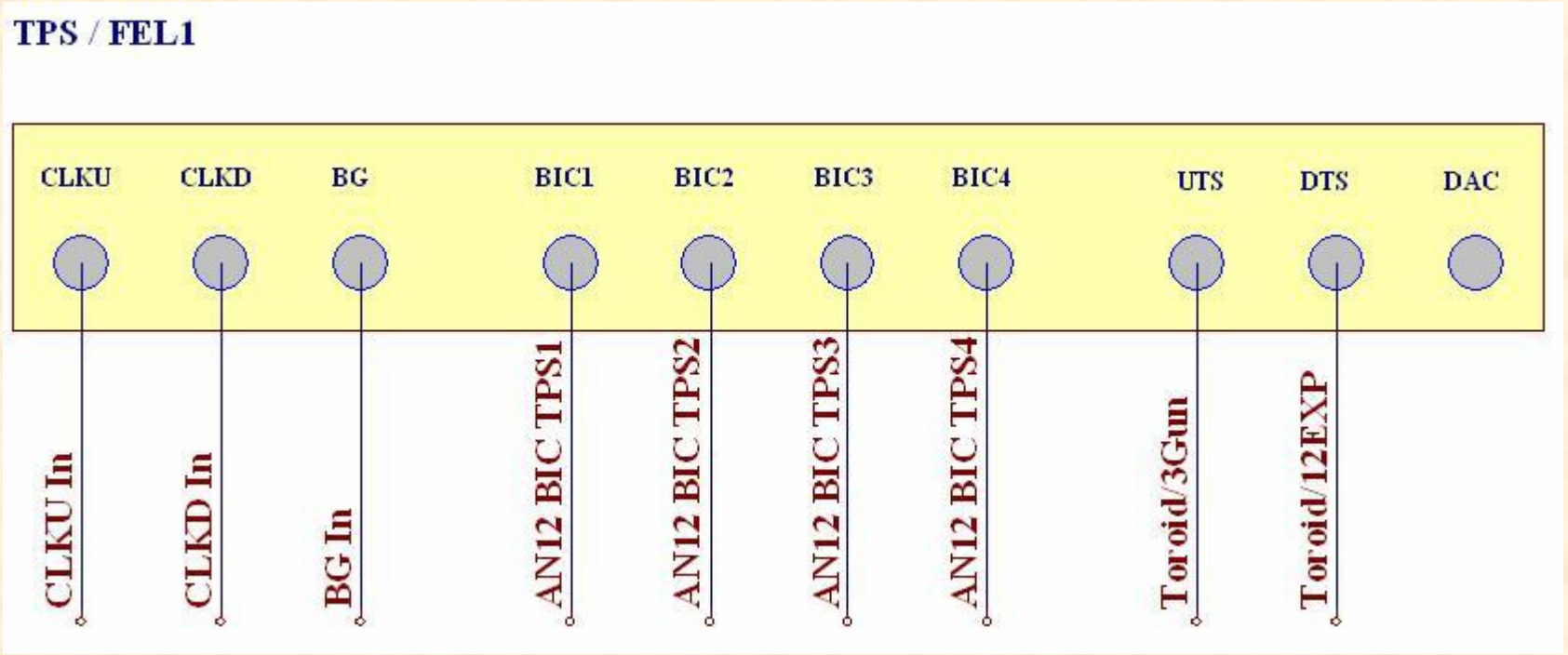
Overview TPS & CLK / BG-Splitter



CLK & Splitter Electronics



TPS Electronics



Single Bunch Alarm from TPS

Put 3dB on the downstream toroid signals