

PULPOKS : CERN participants



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COLOMO Alvaro



FOWLER Tony



GODDARD
Brennan



HOLMA Janne



KRAMER Thomas



MAGNIN Nicolas



MARTINELLA
Corinna



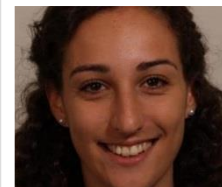
RODZIEWICZ
Janusz



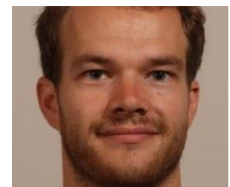
SENAJ Viliam



SERMEUS Luc



VEGA Lorena



WOOG David

ABT Equipment

- Designed, produced and operates over 80 kicker systems.
- Rise times from 5ns (CTF3 strip line kicker) to 2.8 μs (LHC MKD).
- Pulse durations up to 620 μs.
- Pulsed currents up to 400 kA (Antiproton target horn).
- PFL voltages up to 80 kV (PS).

LEGEND

- BEAM 1
- BEAM 2
- NO ANIMATION
- OFF
- ON
- STANDBY
- FAULTY
- OTHER
- LOCAL
- REMOTE
- SOFT-START
- Rdy NOT READY

LHC

SPS

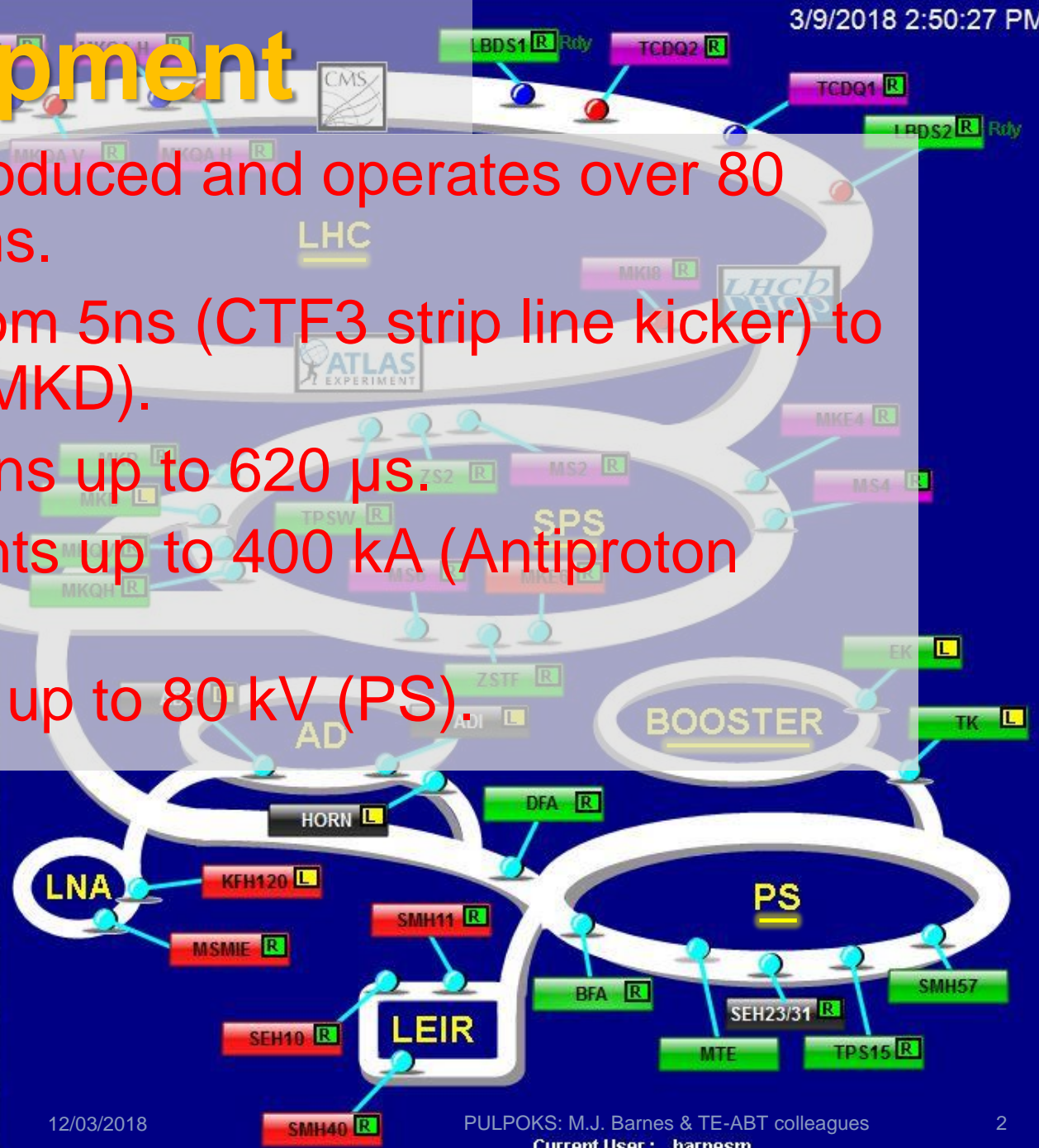
PS

AD

BOOSTER

LINAC4

LEIR



LHC Injector Upgrade (LIU) & High Luminosity (HL) LHC – ongoing projects

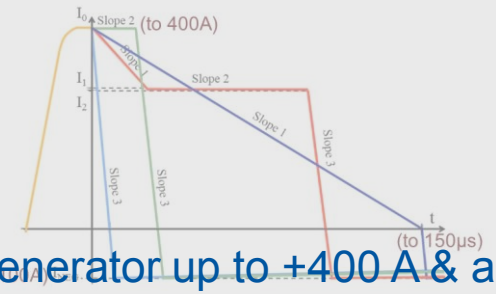
⇒ doubling of beam-intensity

PSB (increased beam energy):

New H- Injection at 160MeV;

New BI-DIS with solid state switches (1 kA, 620 μ s duration)

New KSW solid state switched generator (“arbitrary” waveform generator up to +400 A & a negative maximum of -100 A).



PS (increased beam energy at injection from 1.4 GeV to 2 GeV):

Injection upgrade & 5th generator. Reconfiguration of recombination kickers for faster rise.

SPS:

Injection: spare refurbishment & future upgrade (reduction of beam coupling impedance).

Extraction: reduction of beam coupling impedance (modification serigraphy – S8).

Beam Dump System: Move; New solid state switched PFN; New magnet.

LHC:

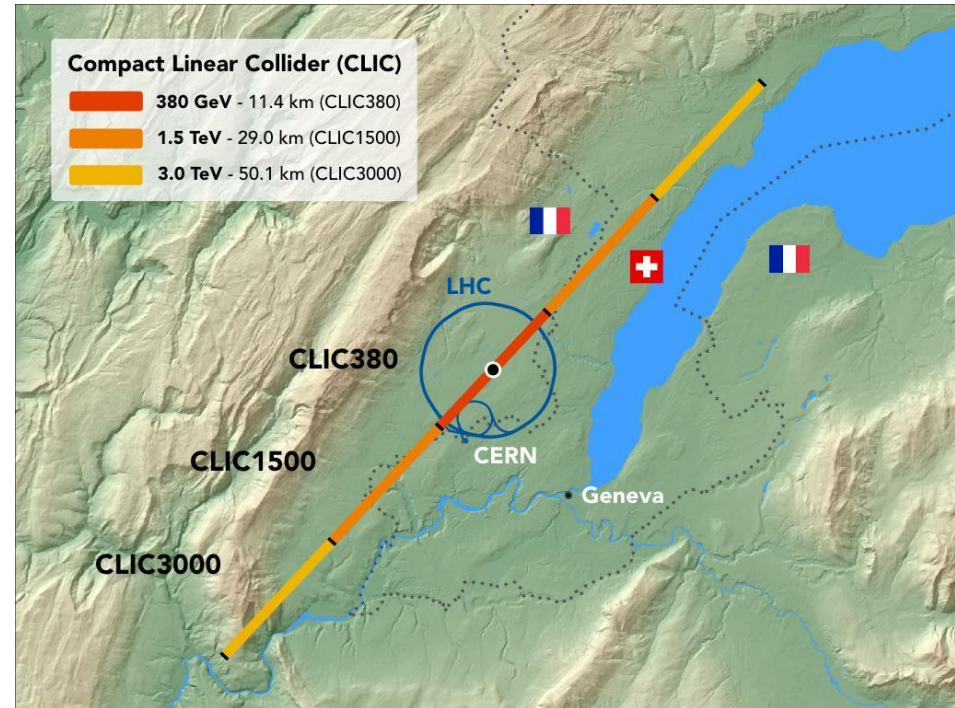
Injection – reduction of beam impedance & dynamic vacuum + improved cooling (S8);

Beam Dump – upgrade for ultimate beam energy (7TeV) and beyond & further reduction of rate of erratics.



Compact Linear Collider (CLIC)

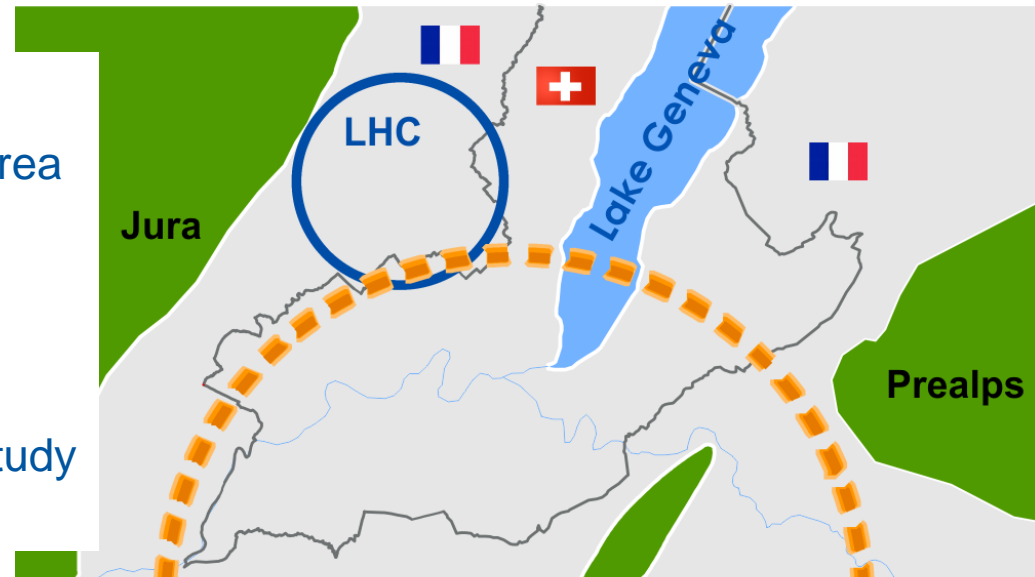
- International collaboration
- Energy (3TeV) \Rightarrow > 50km long !
- Uses “damping rings” to achieve very low emittance beams, before injection to linear collider
- Demanding specifications for extraction kickers generators (S5) and magnets, e.g.:
 - Very high flat-top stability ($\pm 0.02\%$) possible
 - Repeatability: $\pm 0.01\%$
 - Field inhomogeneity: $< \pm 0.01\%$
 - Very low beam coupling impedance



Future Circular Collider (FCC) Study

International collaboration to study:

- **50+50 TeV** collider
- **80-100 km** infrastructure in Geneva area
- Injection @ 3.3 TeV
 - Must be reliable
 - ~2.5 kA, ~2 μ s kicker pulse
 - Semiconductor switches under study (S5)
- Extraction/abort @ up to 50 TeV (Up to **8.5 GJ** to be **safely** extracted and dumped)
 - Must be very reliable
 - Up to ~8kA (and up to 360 μ s)
 - May be subdivided into ~100 magnets and generators.....
- Studies have commenced for generator topologies and injection kicker magnets.



≈ A380 (575 tonnes) flying at 700 km/h

