

Field Detection Using Carrier Suppression in the Attosecond Regime for CW Signals.

Scaling Performance in MicroTCA.4.

Matter & Technologies
ARD-ST3 Annual Meeting

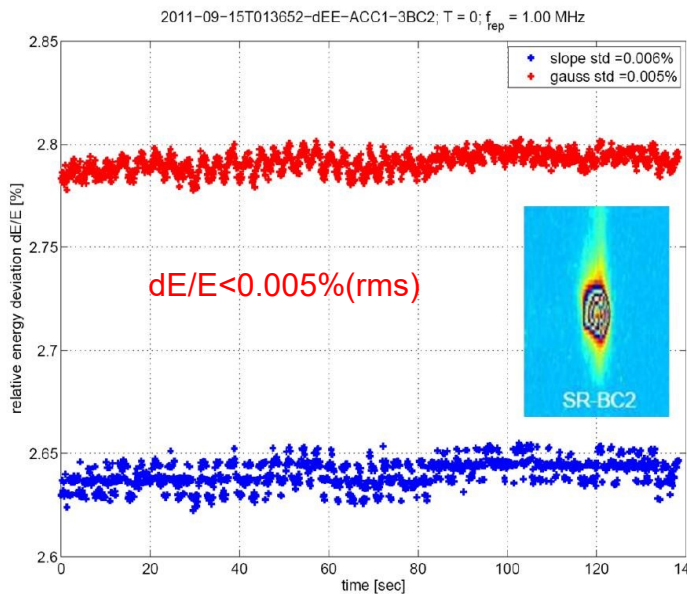
Frank Ludwig (DESY)
Darmstadt, Oct. 16, 2019

State of the art LLRF Controls : 1-3fs for SRF Cavities

@ FLASH



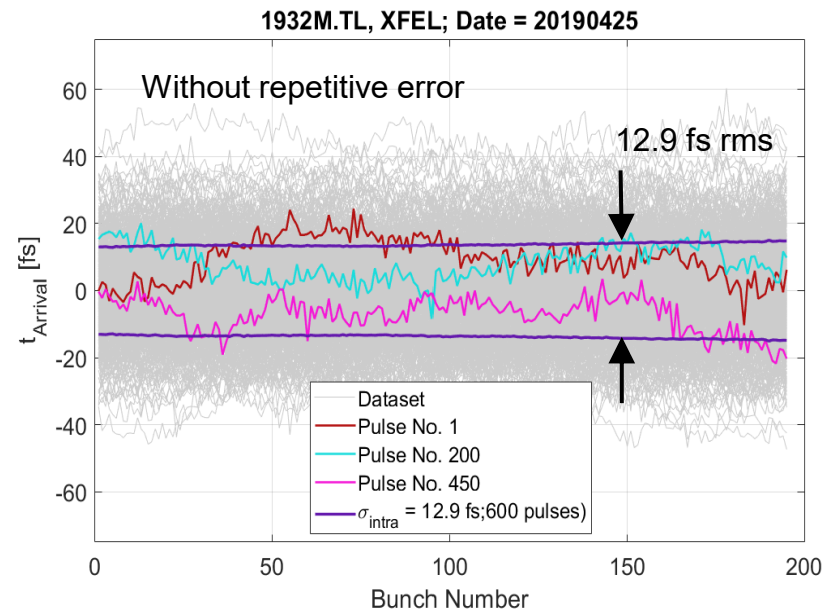
- Beam energy stability (out-of-loop)



@ XFEL



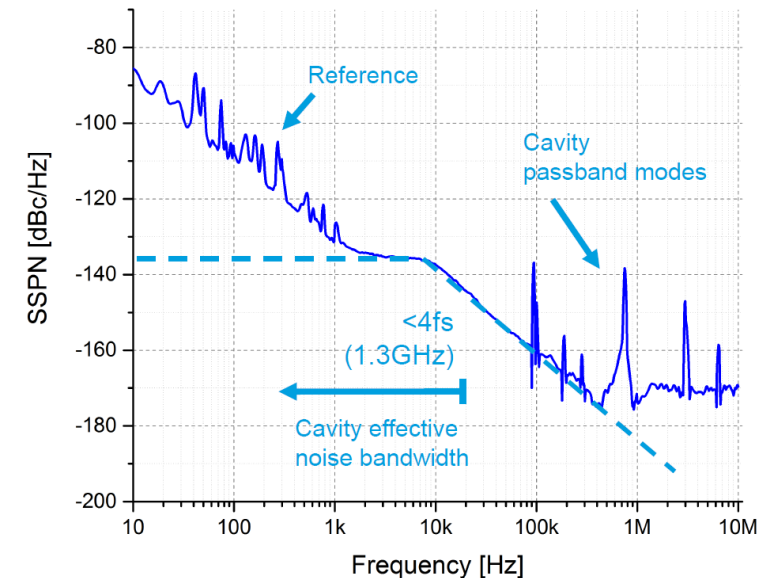
- Bunch arrival time (SASE stations)



@ HZDR

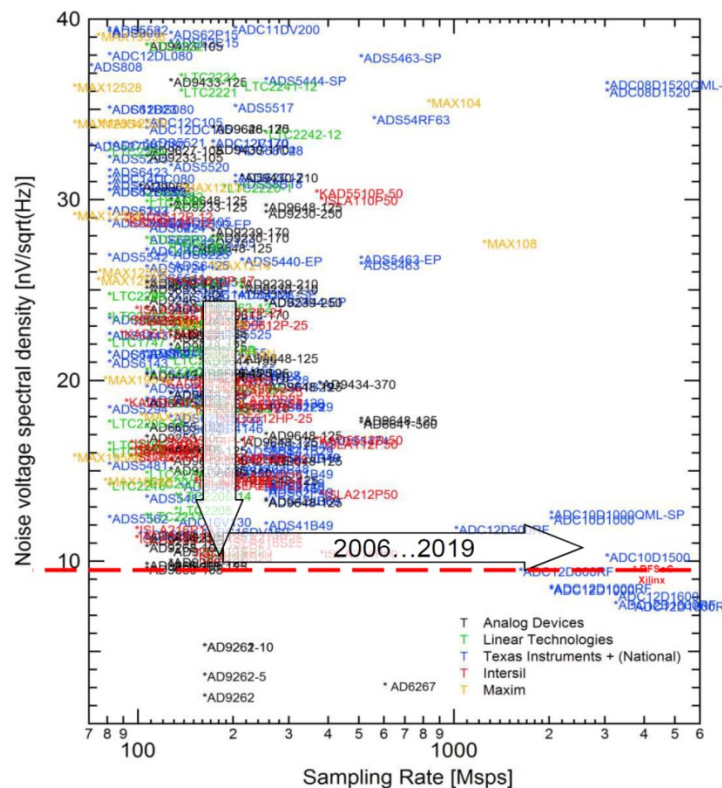


- CW-Operation (FSWP, absolute)



Limitations and Solutions for <1fs Resolution:

Commercial ADCs:



ADCs become faster, but no improvement in NSD since 2007

High- Q_L Cavity Operation – CW Operation:



Receiver Improvements (SRF @ 1.3GHz):

- Poster: Carrier Suppression Interferometer for CW-signals (<100as, <-180dBc/Hz)
- Poster: Scaling Performance in Standards (MicroTCA.4) (<800as, <-163dBc/Hz)

Contact

DESY. Deutsches
Elektronen-Synchrotron

www.desy.de

Frank Ludwig
MSK
Frank.Ludwig@desy.de
+49 40 8998 4919