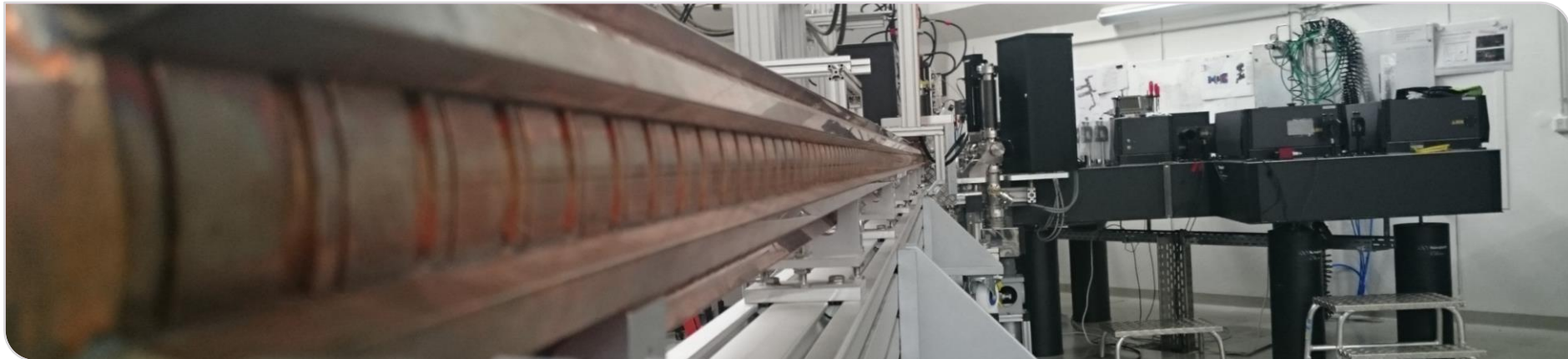


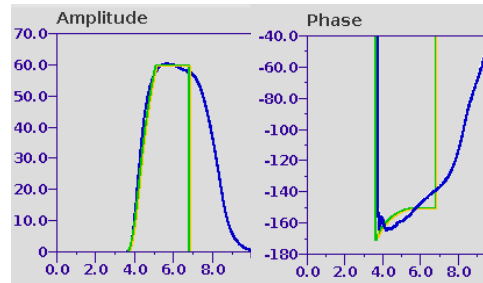
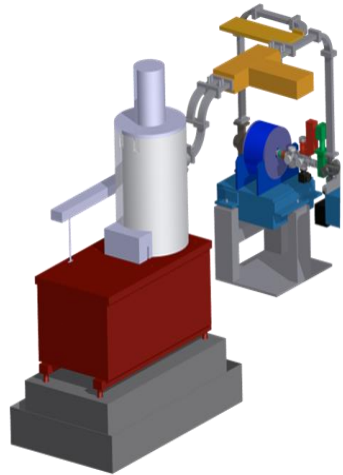
Timing and Control Impacts on RF power at FLUTE

Virtual MT-ARD-ST3 Meeting 2020

Thiemo Schmelzer, Nigel Smale, Marcel Schuh, Robert Ruprecht, Anke-Susanne Müller



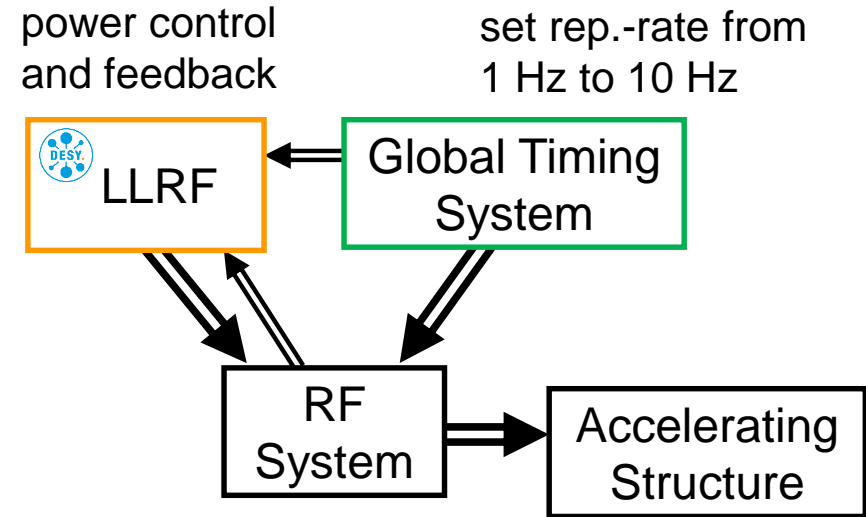
RF System at FLUTE



RF pulse at FLUTE
 green: set value
 blue: cavity readback signal

RF characteristics:

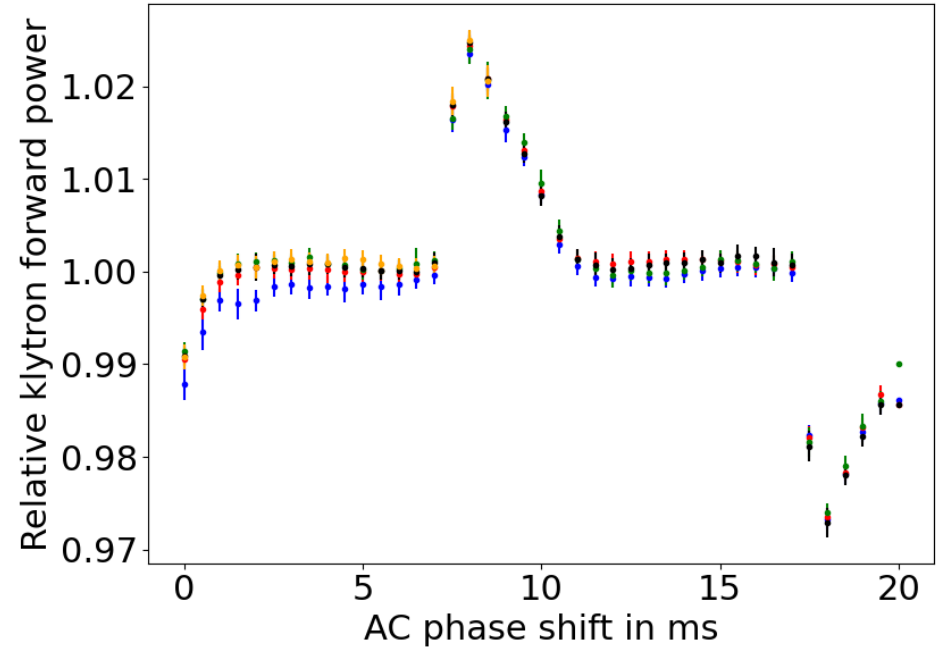
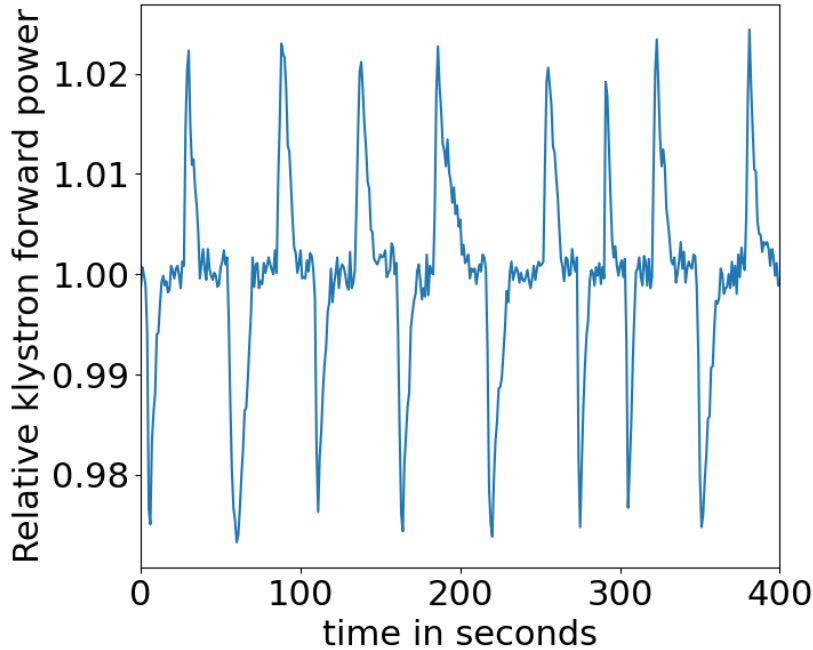
- 4.5 μs RF pulse @ 2.998 MHz
- 1 Hz – 10 Hz repetition rate
- Max. 45 MW output power



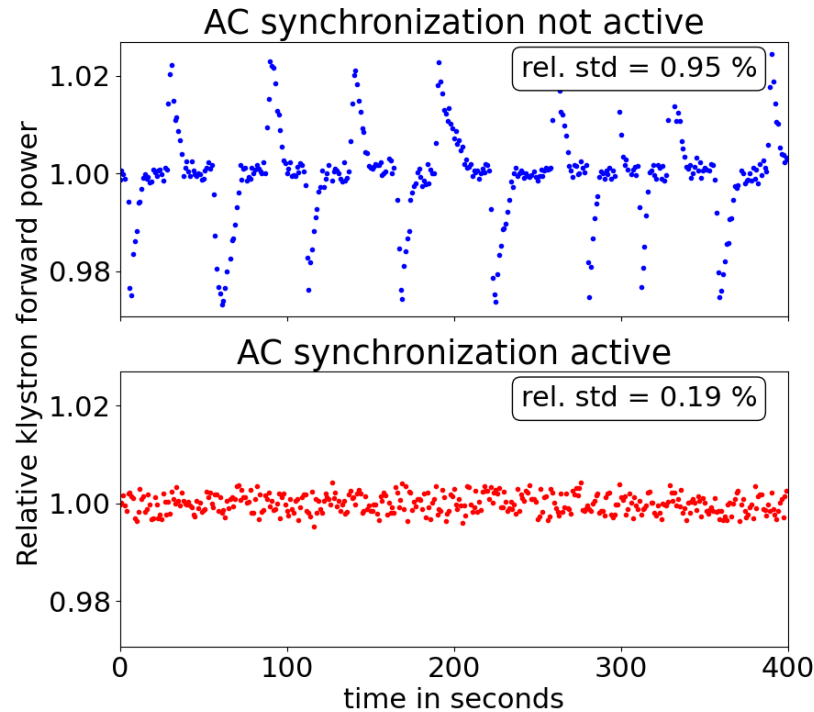
Simplified RF control scheme

M. Hoffmann et al., "High Speed Digital LLRF Feedbacks for Normal Conducting Cavity Operation", in *Proc. IPAC'14*, doi:10.18429/JACoW-IPAC2019-MOPTS018
 M.J. Nasse et al., "First Electron Beam at the Linear Accelerator FLUTE at KIT", in *Proc. IPAC'19*, doi:10.18429/JACoW-IPAC2019-MOPTS018
 Malugin et al., "Commissioning Status of FLUTE", in *Proc. IPAC'18*, doi:10.18429/JACoW-IPAC2018-THPMF068

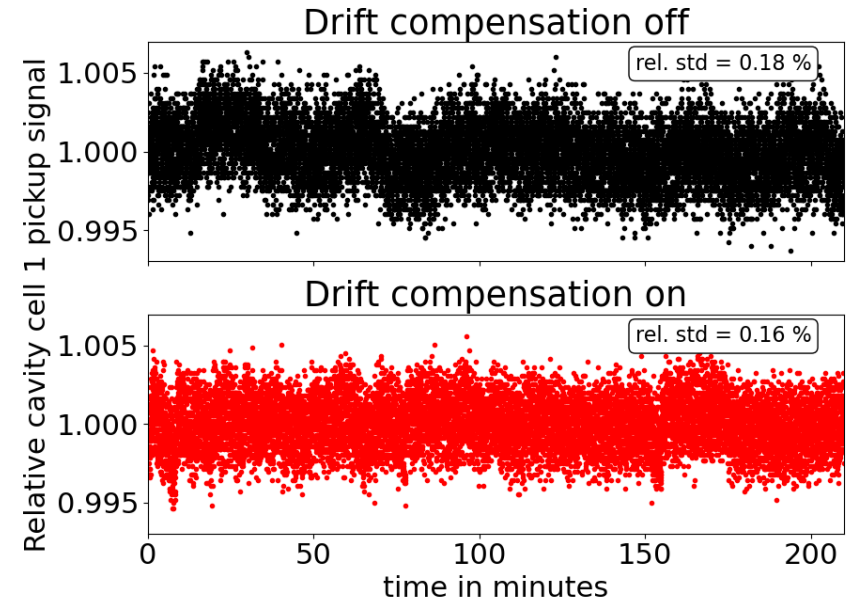
Power Fluctuations from AC-line Noise



RF Noise Reduction



LLRF system temperature drift compensation



- RF stability improvement of factor 6 reached
- Future plan: improve water temp stabilization