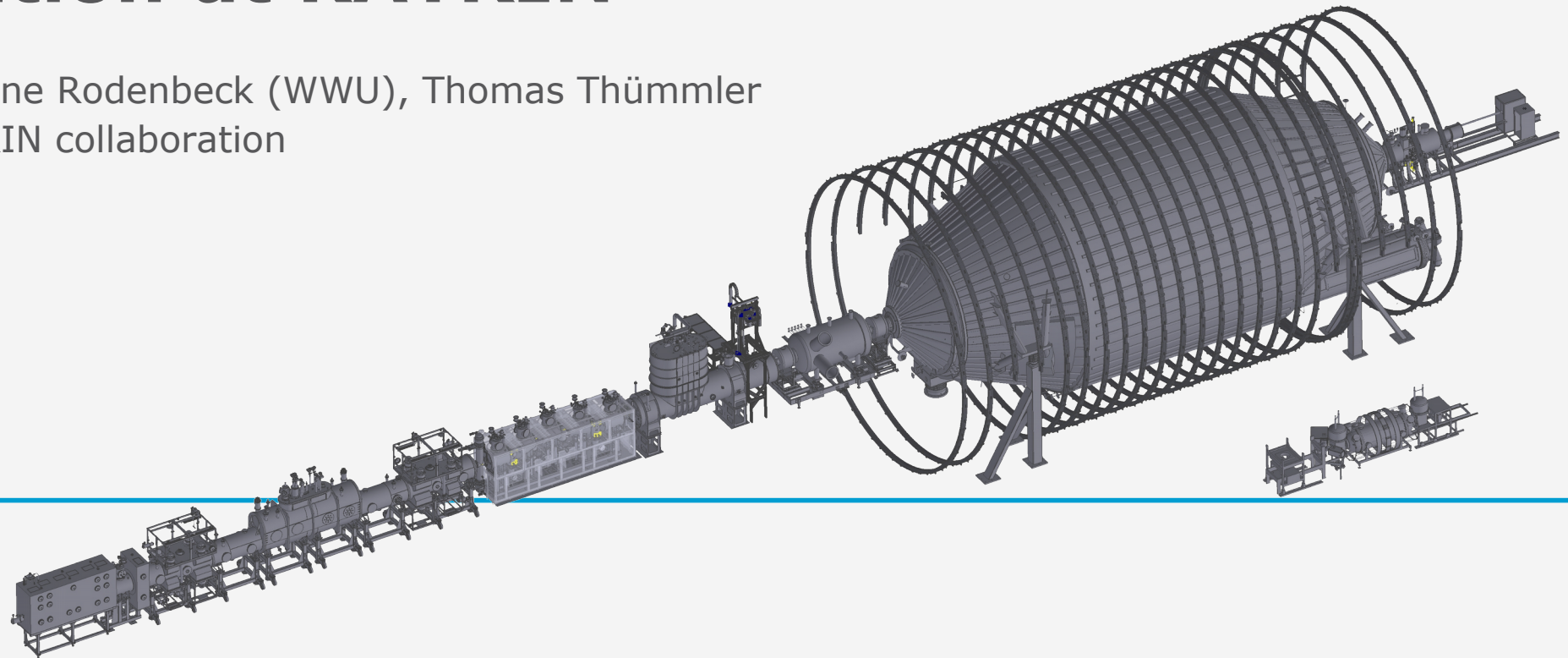


WWU
MÜNSTER



High Voltage Monitoring and Characterization at KATRIN

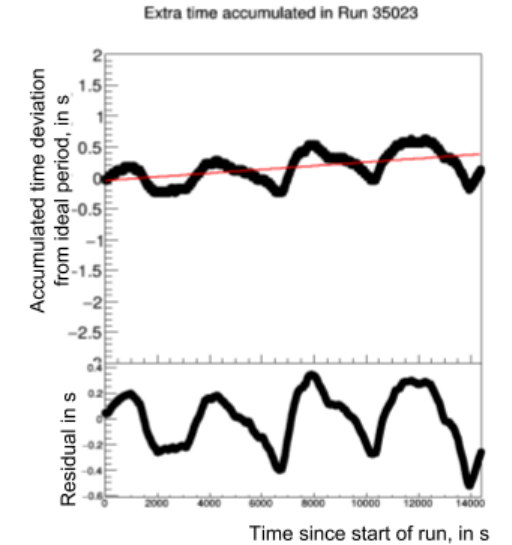
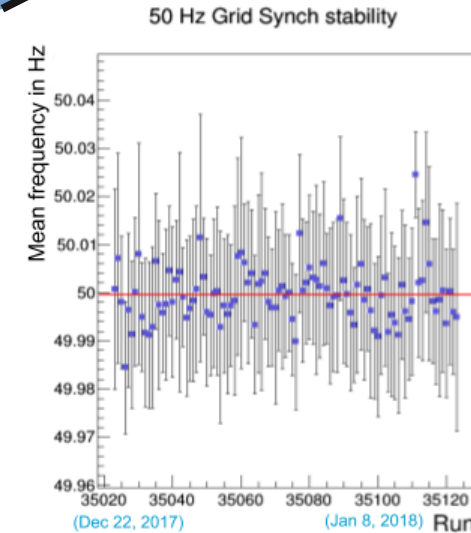
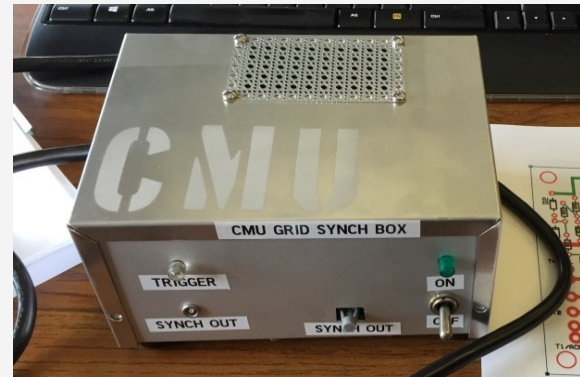
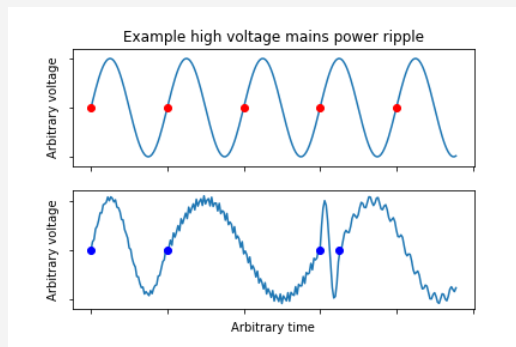
Larisa Thorne (CMU), Caroline Rodenbeck (WWU), Thomas Thümmeler (KIT) on behalf of the KATRIN collaboration



50Hz Monitoring at KATRIN

- Designed, tested, and constructed a 50Hz grid synchronization box to **characterize** the 50Hz mains power ripple
- Outputs a synch pulse at the start of each mains power period, which has provided a **power grid synch timing pulse**

Monday Session,
Poster Wall #12



Keeping track of synch signal
from November 2017, onwards

High Voltage at KATRIN

- Measure tritium decay spectrum by varying the retarding potential
- Must be able to **precisely set** and **monitor** the high voltage which creates the potential
- High voltage system **achieves design goal** with a relative uncertainty **below 60 mV** @18.6kV (3ppm level)

Precision voltmeter measures high voltage via a purpose-built **precision high voltage divider**

See Monday poster #12 for details

Post regulation system **actively** counteracts and smooth voltage instabilities up to 1MHz
→ **Suppresses** 50Hz mains power ripple

