

17RPT03 DIG-AC

A digital traceability chain for AC voltage and current

WP6 - Digital method for traceability of current

CEM - Creating impact

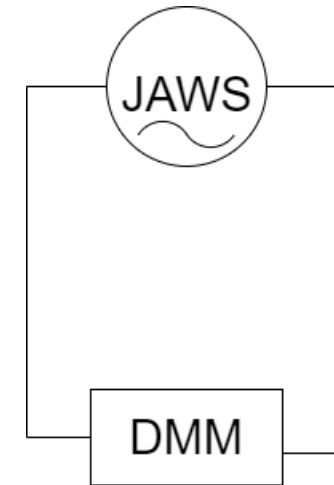
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- New digital method for traceability of current and voltages:
 - Josephson voltage standards used to directly calibrate digitizer, using precisely known voltage waveforms → direct traceability to SI
 - Thermal converters are replaced by digitizers
 - Current shunt or divider are used as a scaling device to access a wide range of possible input currents and voltages
- Advantages:
 - Reduced measurement times
 - Reduced uncertainties in some parameter ranges
 - Flexibility, allowing future spectral characterisation of instruments using Josephson based systems

- In this document:
 - Description of the new traceability route setup for current for dissemination between stakeholders
 - For further information consult working packages documentation

- Step 1: calibration of digitisers with Josephson standard
 - For example, using a JAWS as standard and a digital multimeter as digitiser
 - Voltage waveforms:
 - Pure waveforms
 - Combination of pure waveforms
 - Same amplitude, same phase
 - Different amplitude, same phase
 - Same amplitude, different phase...

Setup:



Example:



- Step 2: calibration of digitiser with Josephson standard
 - Current source provides current to:
 - Standard shunt-digitizer
 - Shunt-digitizer under test
 - Digitiser outputs are compared
 - Knowing standard shunt-digitiser correction

Correction of
shunt-digitizer
under test



Setup:

