

Cavity activities for ILC at DESY

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Cavity activities

- > Order of European XFEL cavities to be placed in spring 2010
=> including 24 ILC-HiGrade cavities
- > Three European XFEL prototype modules:
 - PXFEL1:** tested with average gradient of 30 MV/m
assembled and to be operated in FLASH
 - PXFEL2:** ready for test on module test stand
 - PXFEL3:** string assembly in clean room
- > Five more nine-cells in fabrication (to be completed in summer 2010)
- > ILC cavity data base:
 - Oracle data base set up for yield analysis
 - significant input of FLASH cavities

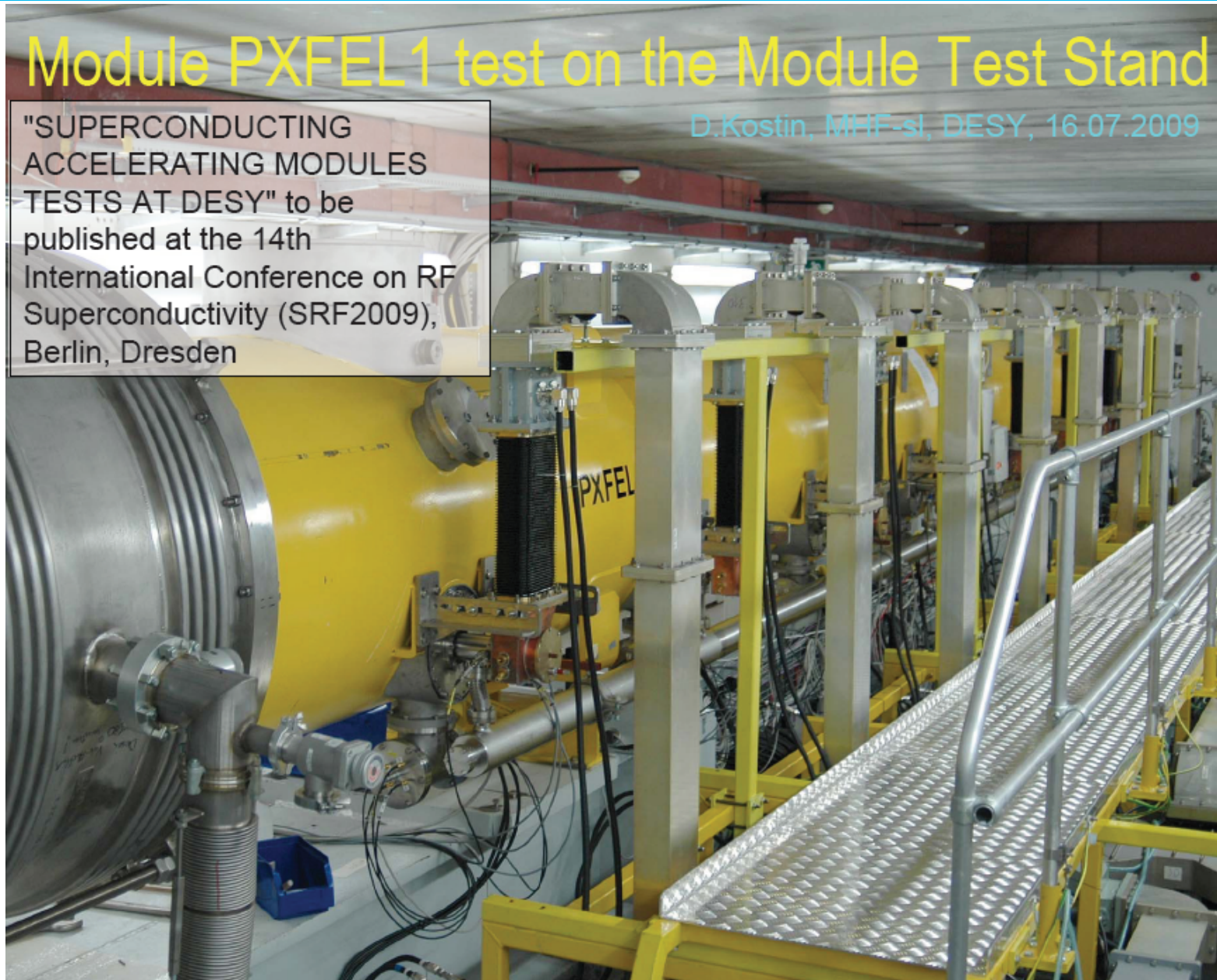


Module PXFEL1

Module PXFEL1 test on the Module Test Stand

D.Kostin, MHF-sl, DESY, 16.07.2009

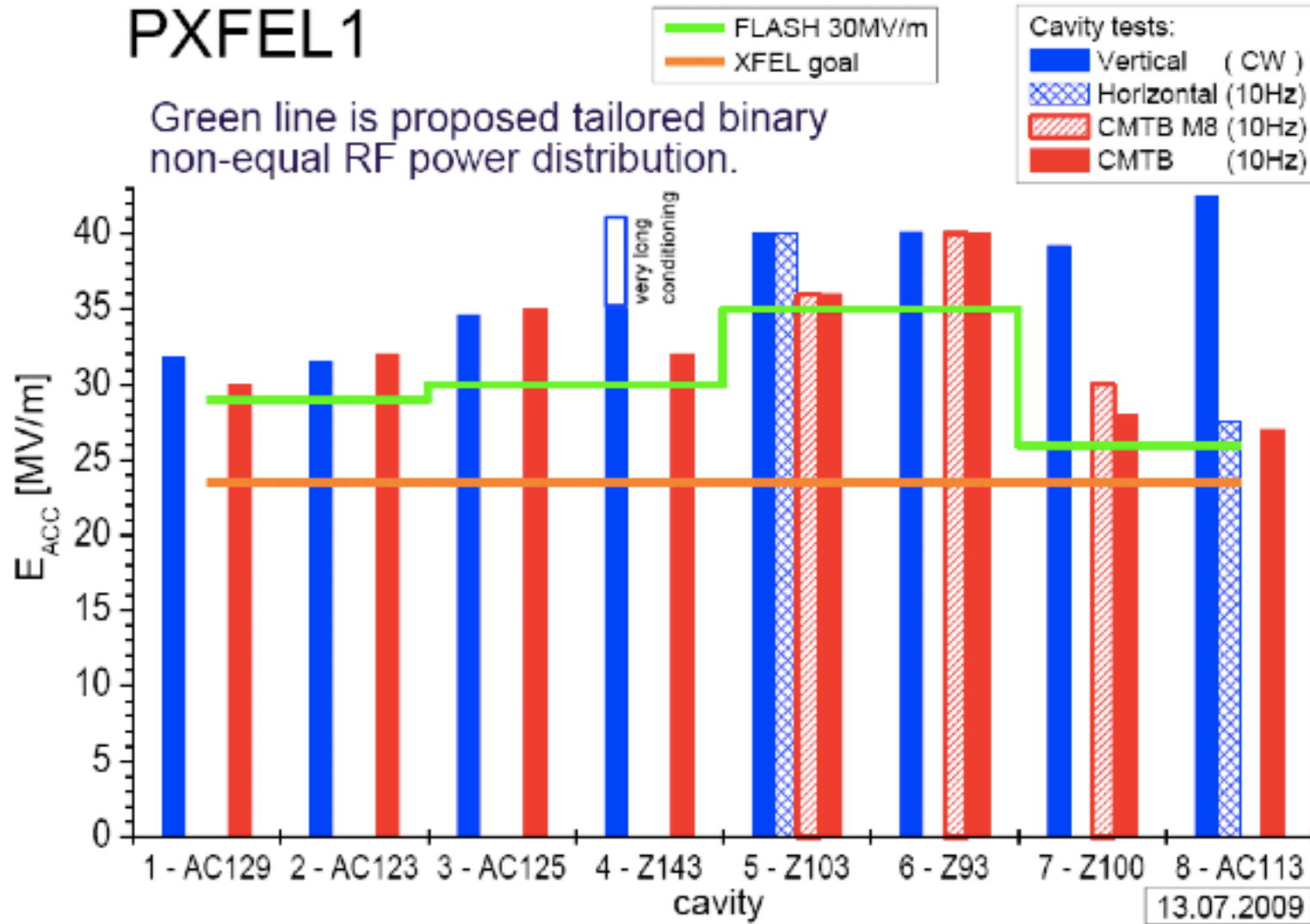
"SUPERCONDUCTING
ACCELERATING MODULES
TESTS AT DESY" to be
published at the 14th
International Conference on RF
Superconductivity (SRF2009),
Berlin, Dresden



Results on PXFEL1

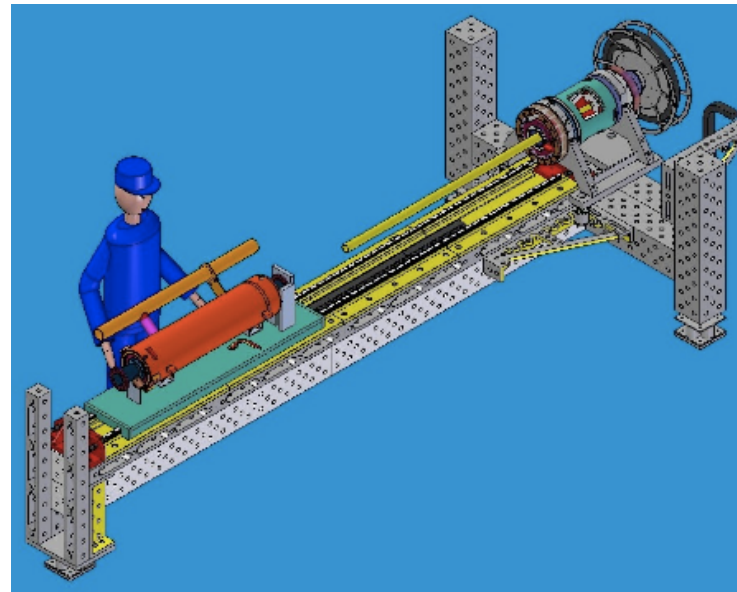
PXFEL1

Green line is proposed tailored binary non-equal RF power distribution.



Optical inspection at DESY

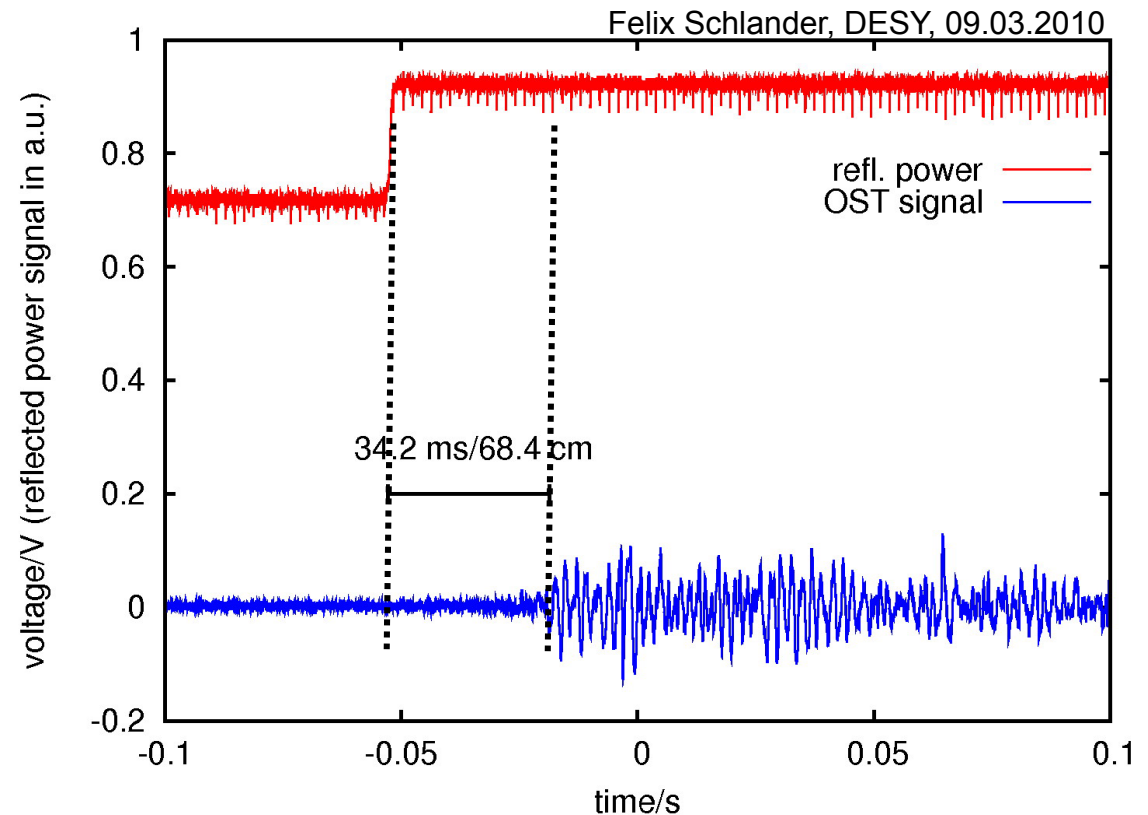
- > Kyoto/KEK-camera system in use since August 2008
- > More than 25 cavities inspected
- > Correlation between hotspot in Tmap-measurement and defect found by optical inspection in several cases
 - See talk by Y.Yamamoto and S. Aderhold for examples
- > Automated inspection set-up under development
 - Reproducibility, speed, robustness
 - Suitable for application in cavity mass production



Commissioning of Second Sound System

à la Z. Convey et al.

- 2nd sound observed during test of AC74 in $2/9 \pi$ mode at 21 MV/m
- One OST was producing signals
- Signal observed over “large” distance
- Now installing 8 OST
 - Goal: locating quenches in test stand with minimum installation requirements
 - Explore suitability for routine diagnostics



Tools for cavity handling

Vertical insert for AMTF

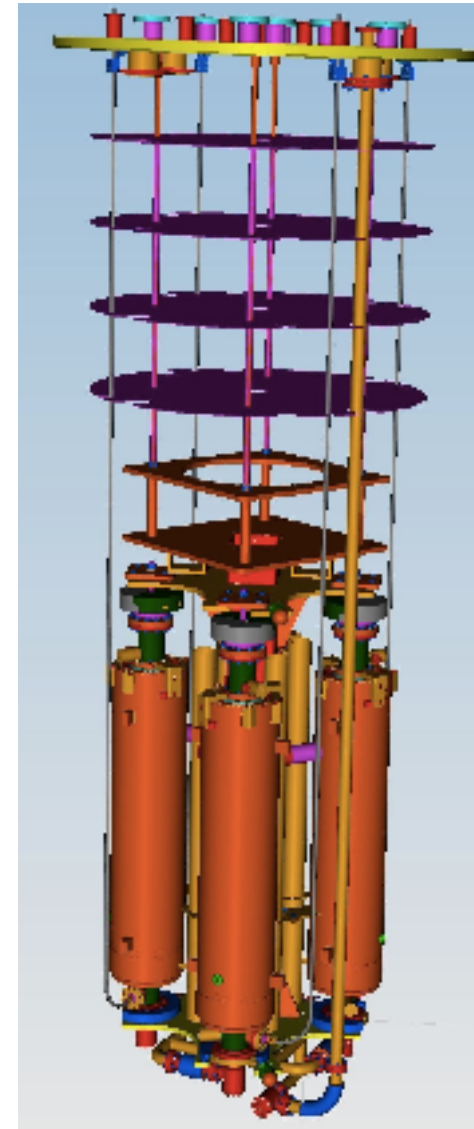
Design has been completed

Suitable for cavities with and without He-vessel

Lower part serves as a transport frame

mounted to trolley with shock absorbers

detailed transport simulation has been made



Automated vertical test

Reproducibility

- No operator intervention

- auto-calibration

Increased testing speed

- automatic determination of phase and frequency

- parallel measurement of gradient, power and radiation level in one cavity

Automatic consistency check

Remote control

