Contribution ID: **13** Type: **Poster**

Materials Science Diffractometer STRESS-SPEC - Current status, new developments and future plans

Wednesday, 11 December 2019 15:45 (15 minutes)

STRESS-SPEC is the dedicated diffractometer for materials science applications at MLZ. It offers high thermal neutron flux and is mainly used for fast residual strain and texture (bulk, local or gradient) measurements [1, 2]. Recent upgrades include a new detector system developed in-house, a new fully automatic slit system for gauge volume definition of the monochromatic beam, and a quenching / deformation neutron dilatometer. As a further development and in line with the new slit system we developed a new radial collimator to shape the gauge dimensions of the monochromatic beam impinging on the sample. Here we will present results of the commissioning experiments of the collimator together with giving an overview of the current capabilities of the diffractometer.
STRESS-SPEC has pioneered the use of robotic sample manipulation [2, 3] and improvements of the position accuracy of this device through a new adaptive control system will be outlined as well.

References

[1] M. Hofmann et al, Mater. Sci. Forum. 524-525, 211-216 (2006)
[2] H.-G. Brokmeier et al, Nucl. Inst. & Meth. in Phy. Res. A 642, 87-92 (2011)
[3] C.R. Randau et al, Nucl. Inst. & Meth. in Phy. Res. A 794, 67-75 (2015)

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Session Classification: Poster session

Track Classification: Materials Science