Date: 21st July 2011

Participants:
T. d. S. Rolo, D. Haenschke, Y. Cheng

Introduction of current state of UFO concept.
Presentation of design documents for UFO station.

First conceptual idea of integration RCI: Use high resolution tomography table tilt (range 10-4 to 10-5 deg), to scan the rocking with a high resolution. Typical width of the rocking curve is 5*10-4 deg.

Samples for rocking curve imaging are usually flat (patterned substrate, wafers, etc.), up to 3x3 cm, usually can be smaller.

Concept for RCI sample manipulator:
hexapod in central aperture of large rotation stage. Consequence: limitation to 360 deg rotation of large laminography stage, **cable management for hexapod required**.
Possibility to perform topo-tomography.
360 deg rotation sufficient for this imaging modality.

Concept for RCI detector:

Detector paramters:
Diffracted intensity quite low, expected exposure time: 1 - 15 s.
Required spatial resolution: focus on high resolution, 1 um to submicron. 5-10 um spatial resolution sufficient for special cases (dislocation imaging).
Required dynamic range depends on diffraction power of sample (at ID19, FreLoN could not be saturated in reasonable time, even for silicon). → secondary parameter
Linearity: 1% should be sufficient.
Distortion: same as for other imaging techniques, max. distortion given by effective number of pixels, typ. 0.1 %
FOV: as large as possible, not crucial, since usually focus on a ROI.

Crucial parameter: distance between detector and sample should be as small as possible (ideally much smaller than 50 mm).

For alignment, a diode near to the detector input window would be beneficial.

Secondary detector, mounted on arm with rotation axis through laminography rotation axis, with degree of freedom to choose the distance between sample and camera.

Questions:
What is the wobble of the Aerotech ALAR 325 SP and LP?
(important for Rocking curve imgaing)
Do we need camera rotation in plane perpendicular to the diffraction plane?
(probably can be avoided if sample is tiltable)
How to include Lukas into the discussion?

Actions:
DH will provide scientific use cases for Rocking Curve Imaging

TR will update the requirements and design documents to reflect the current state of the concept.
Update drawings → TR (U. Herberger)
YC contact L. Helfen about active vibration compensation system
TR design secondary RCI detector system
TR send updated requirements and design documents to Lukas

Next meeting: Monday, 1st August 2011