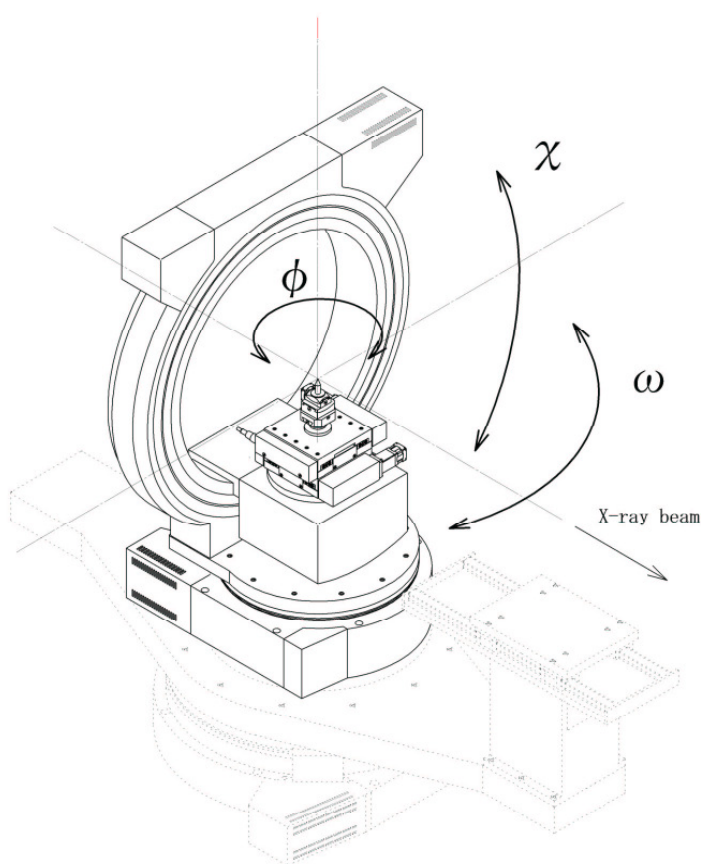


IV Sample Stage

Sample stage is a part of classical four-circle diffractometer with horizontal refractive plane. Its 2-circles (χ_s , ϕ_s – from bottom to top) sit on top of support block, which is attached to common supporting structure and passes through opening in the detector arm $2\theta_{DS}$ rotation stage and the omega ω_s , which is corresponding with Bragg angle. Axes of all four rotations intersect at one point, which coincides with the sample position. The ω_s and $2\theta_{DS}$ and ϕ_s have coinciding rotation axes, which are oriented vertically.



IV.a) Schematic view of four-circle diffractometer.

Solid lines show ϕ - χ - ω 3-circle. Sample adjustment X-Y-Z stages, as well as small-sample stage are also shown by solid line. Broken line shows 2θ arm, stand and detector slide. The refractive plane of X-ray is horizontal, that is X-ray beam comes from the top-left to bottom right.

General parameters and specifications of the sample goniometer and sample adjustment stage assembly are listed below. Specifications of individual stages are

given in particular section.

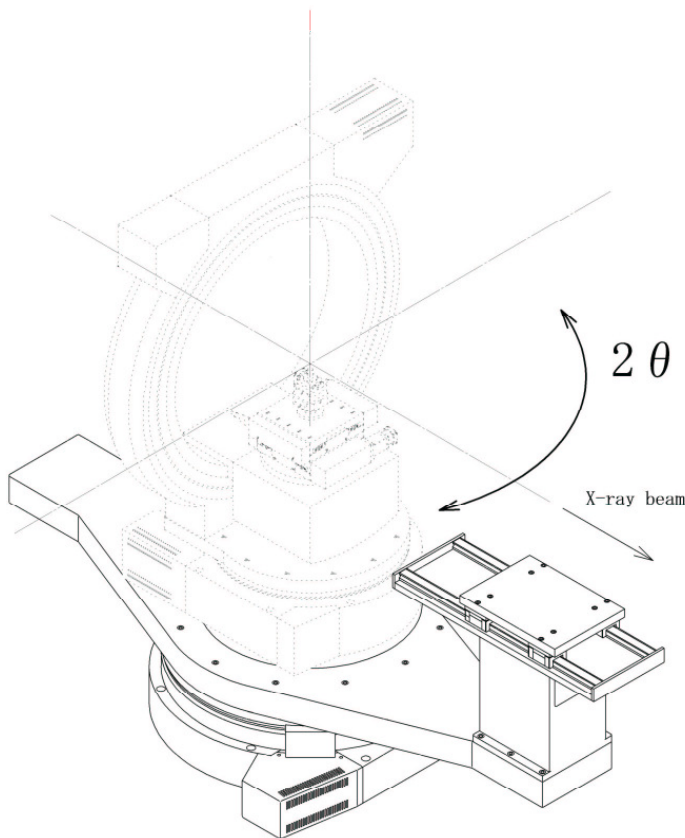
Sample Goniometer Specifications

	Sphere of confusion for $\omega_s, \chi'_s, \varphi'_s$ axes :	20 μm
	Parallelism of χ'_s plane with φ'_s axis :	20"
	Goniometer environment :	Air
	Sample and holder assembly volume :	max. $\varphi 200 \times 200$
mm ³	Sample and holder assembly weight :	max. 8 kg

Sample positioning stages are installed on top of the φ_s rotation. Function of these stages is to adjust position of sample center into common rotation center of the goniometer. Different Sample holders can be attached to the top of three-axis (XYZ) translation. Sample microscope assembly helps to move the sample to the goniometer common rotation center with high accuracy.

V. Two Theta Goniometer

Two theta structure. The circle has central hole, which is used to pass support of the ω_S circle. Rotation axis of the $2\theta_{DS}$ coincides with rotation axis of the ω_S rotation and passes through intersection point, where rotation axes of the diffractometer intersect. This point coincides with the sample position. Detector arm of the two theta arm holds a stand and analyzer slide. 2-axis analyzer goniometer with analyzer adjustment stages is mounted on top of this slide. Detector arm of the analyzer goniometer allows for flexible experimental arrangement with various beam conditioning and detecting equipment. In front of the analyzer assembly, there is beam conditioning and detector mount, which allows mounting of beam conditioning filters, slits, film cassettes and detectors.



V.a) Schematic view of four-circle diffractometer. Solid line shows 2θ arm with detector arm, stand and analyzer slide.

Analyzer goniometer assembly and beam conditioning and detector mount in

Front of the analyzer slide are not shown. Broken lines show ϕ - χ 2-circle for sample adjustment X-Y-Z stages, as well as the small-sample stage. X-ray beam

comes along Y - horizontal coordinate axis (from top-left to bottom right).

General parameters and specifications of the detector and analyzer goniometer, as well as analyzer adjustment stage assembly are listed below. Specifications of individual stages are given in particular section.

Two theta arm Specifications	:	
Sphere of confusion including $2\theta_{DS}$ axis	:	50 μm
ωS and $2\theta_{DS}$ parallelism	:	5"
ωS and $2\theta_{DS}$ concentricity	:	20 μm
Goniometer environment	:	Air

