INSTRUMENTATION FOR EXPERIMENTATION IN LIGHT MACHINES AND IN ESS

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BEAMLINES AND SOURCES

Synchrotron

X-FEL

Neutrons (Spallation Source)

Main points
- Budget: a few MEE
- 10-40 BLs per source
- High variability of products
INFRASTRUCTURES

Hutches
X-ray, neutron shielding

Distribution networks:
LN2, Fluids, gases, electricity, high speed Ethernet.
VACUUM AND MECHANICS

Motorized Benches

Fixed girders

Vacuum chambers
High – moderate vacuum

Pumps and vacuum monitoring
OPTICAL ELEMENTS

Monoch. Crystals
Silicon, Ge, InSb
Gratings

Mirrors & guides
Flat, cylindrical, elliptical
High aspect ratio
Cooling needed
PRECISION MECHANICS

- Sample (micro-nano) positioning
- Mirror benders/coolers
- Monochromators Repro. < 1μrad, 1μm
- OE positioning
CRYOGENICS

Sample cooling (LNT, LHe, below 1K)

Monochromators Cooling (LNT)
DETECTORS & ELECTRONICS

Ion chambers
p-Amperometers

HP-Ge or SDD
Peak analysis electronics

2D detectors
Image analysis

EH2
CONCLUSION

• Several production sectors involved
• Small productions, highly customized
• Peak load periods ahead
• Continuous beamline upgrades