



Faculty of Science

Accelerators and Storage rings for Life Science and Materials Research. The Danish Perspective



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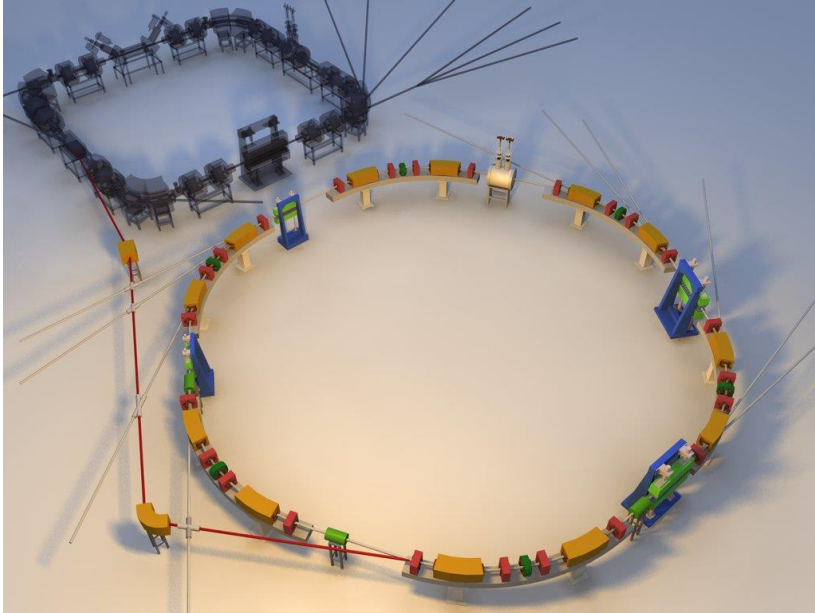
Why are accelerators important for Life Science and Materials Research?

Technology output from Particle Physics



The Danish Synchrotron Radiation Facility:

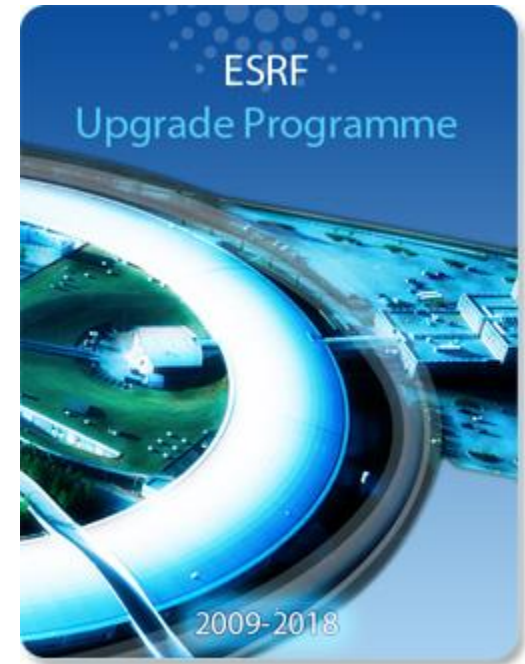
ASTRID II



Parameter	ASTRID2
Energy (MeV)	580
Circumference (m)	45.7
Current (mA)	200
Lifetime (hours)	Infinite (top-up)
Horizontal emittance (nm)	12
Characteristic energy (eV)	238
Characteristic wavelength (nm)	5.2
Straight sections (number and length)	4x2.8



Danish membership of ESRF



European Spallation Source ESS

Neutrons For the Future



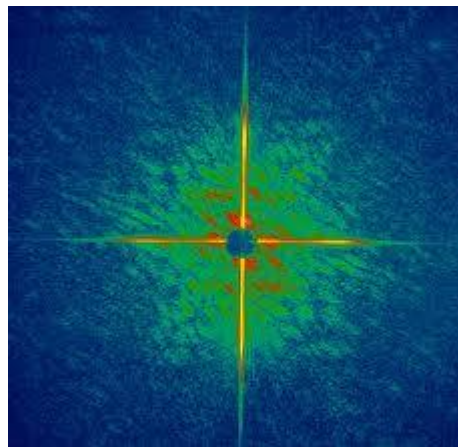
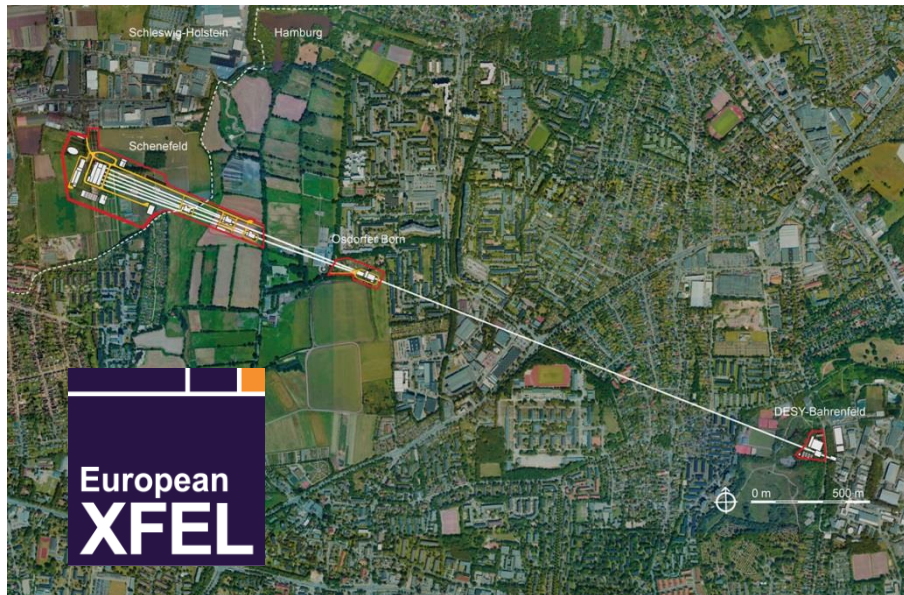
Synchrotron Radiation Facility MAX IV @ Lund



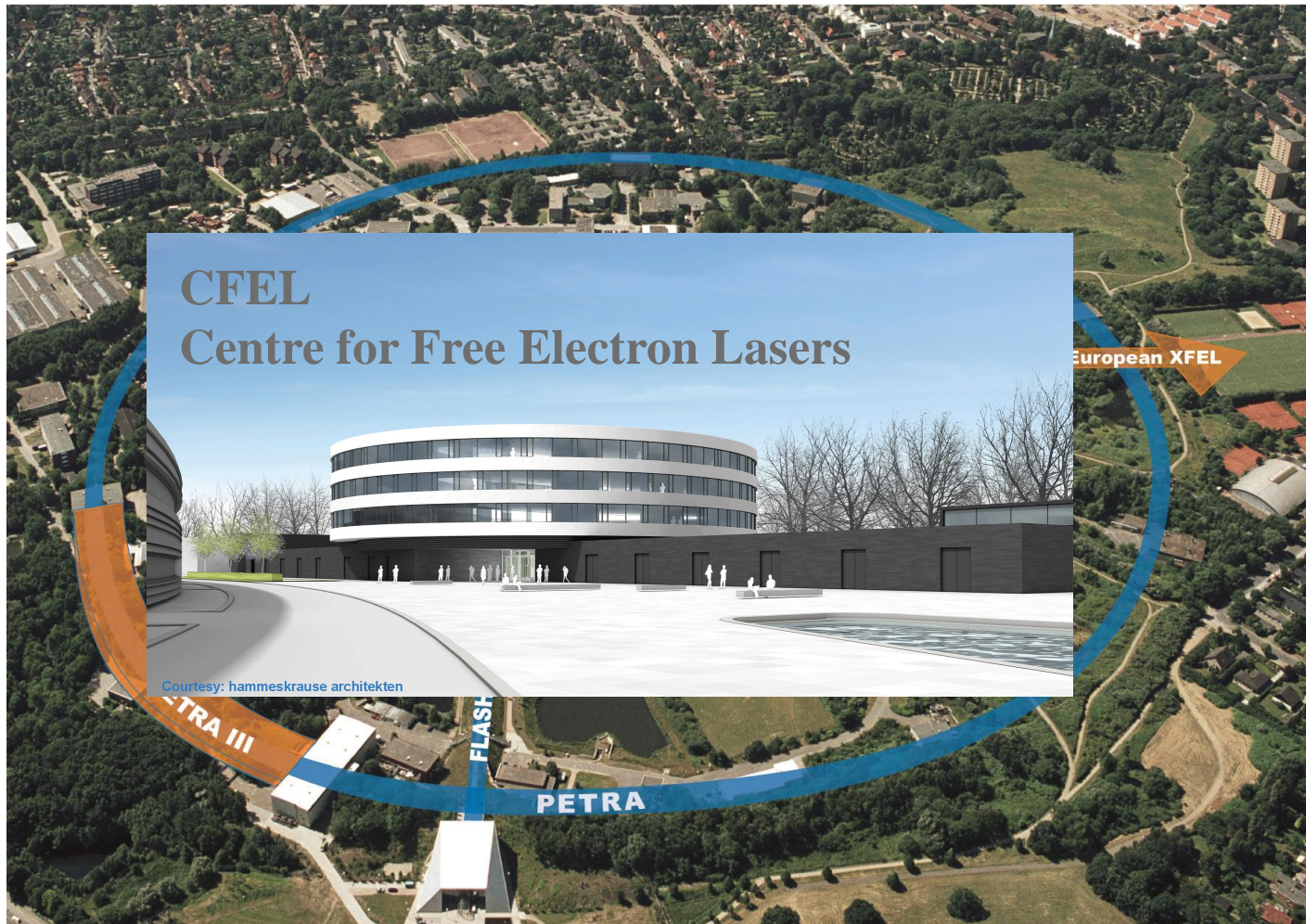
Circumference (m)	528
Nr of straight sections	20
Injection	full energy, top-up
Stored current (mA)	500
Horizontal emittance (nm rad)	0.2 - 0.3
Vertical emittance (nm rad)	< 0.008
Horizontal beam size (σ μm)	42 - 52
Vertical beam size (σ μm)	< 6



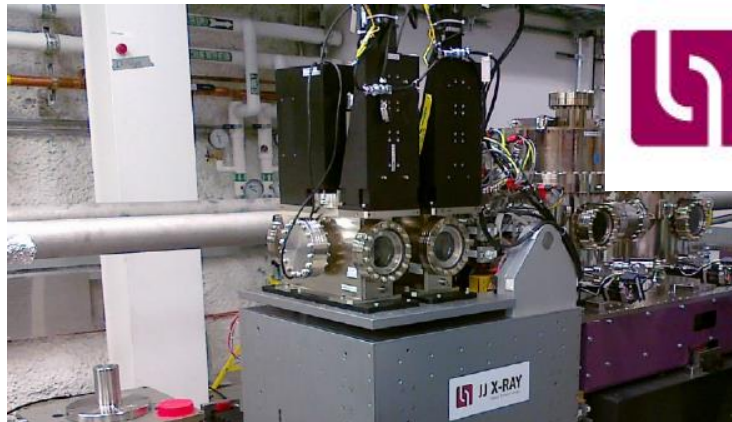
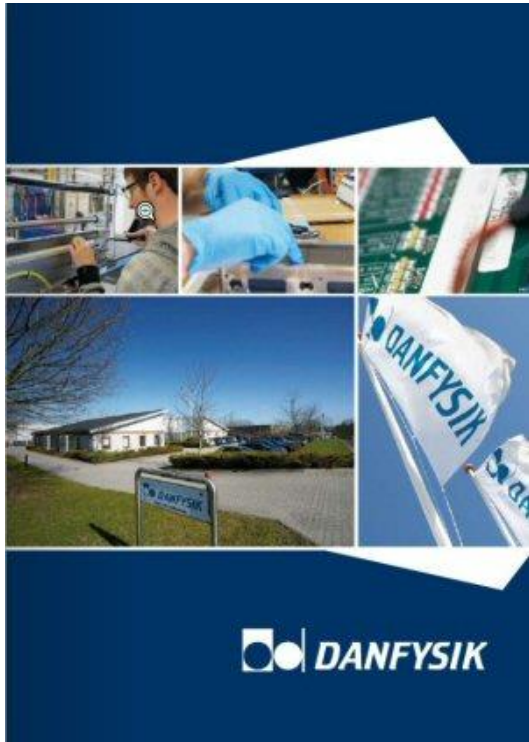
European XFEL Hamburg



DESY , new center for Photon Science



Danish Companies



JJ X-RAY
Danish Science Design



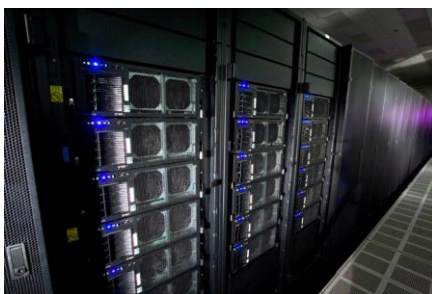
What do we get from CERN and particle physics

Accelerator technology

Detector technology

Data handling

Governance structure
international collaborations

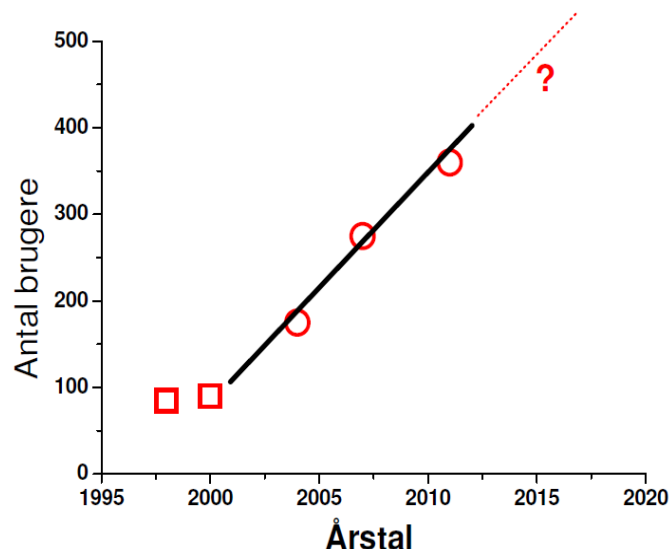


CATALYSING YOUR BUSINESS

DANSCATT

Danish Centre for the use of Synchrotron X-ray and Neutron facilities

Funded by the Natural Research Council:



360 scientists incl about 90 Staff, 50 Post docs
140 PhD students and 80 Master/Bachelor students

Main tasks for DANSCATT

- support for travel and experiments at international facilities
- development for new instrumentation and new scientific directions using synchrotron x-ray radiation and neutron scattering
- training of high-quality graduate students and post docs
- summer schools and courses, including experimental exercises at international facilities.
- stimulating collaboration between groups, yearly meetings, homepage
- International relations (ESRF, XFEL, ILL, PSI)
- Advisor role for research council and ministry



Training

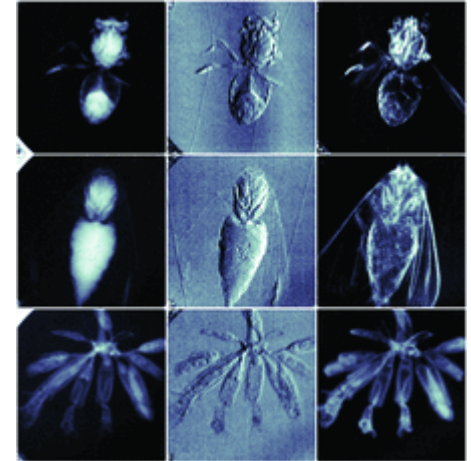
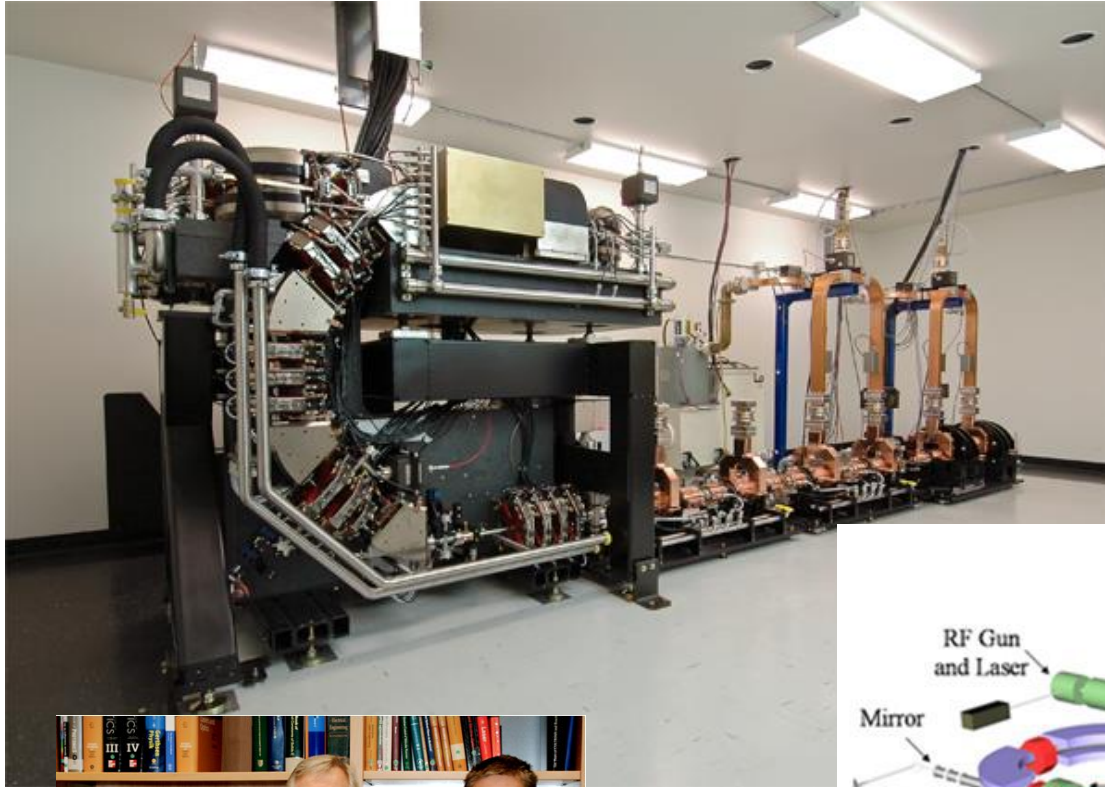
Provide travel support for students (Bachelor+Master+ PhD)

Exercises at MAXlab, Cassiopeia and at PSI, SINQ+SLS

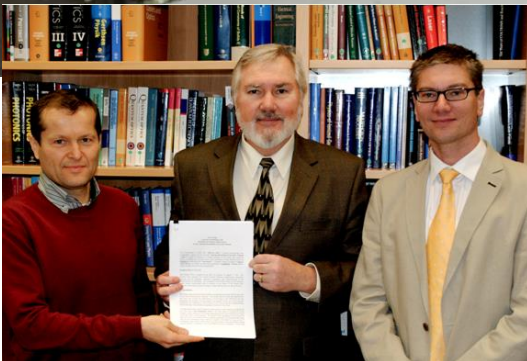
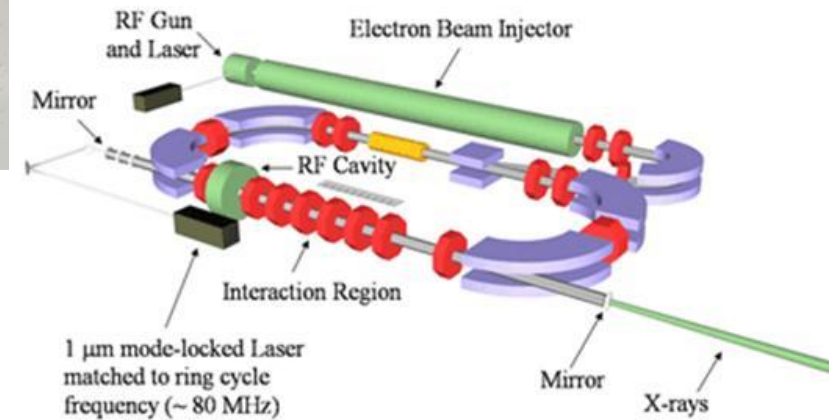
Summerschools



Compact Light Sources – a dream?



Compact Light Source



First machine in TUM