



Helmholtz Institute Jena



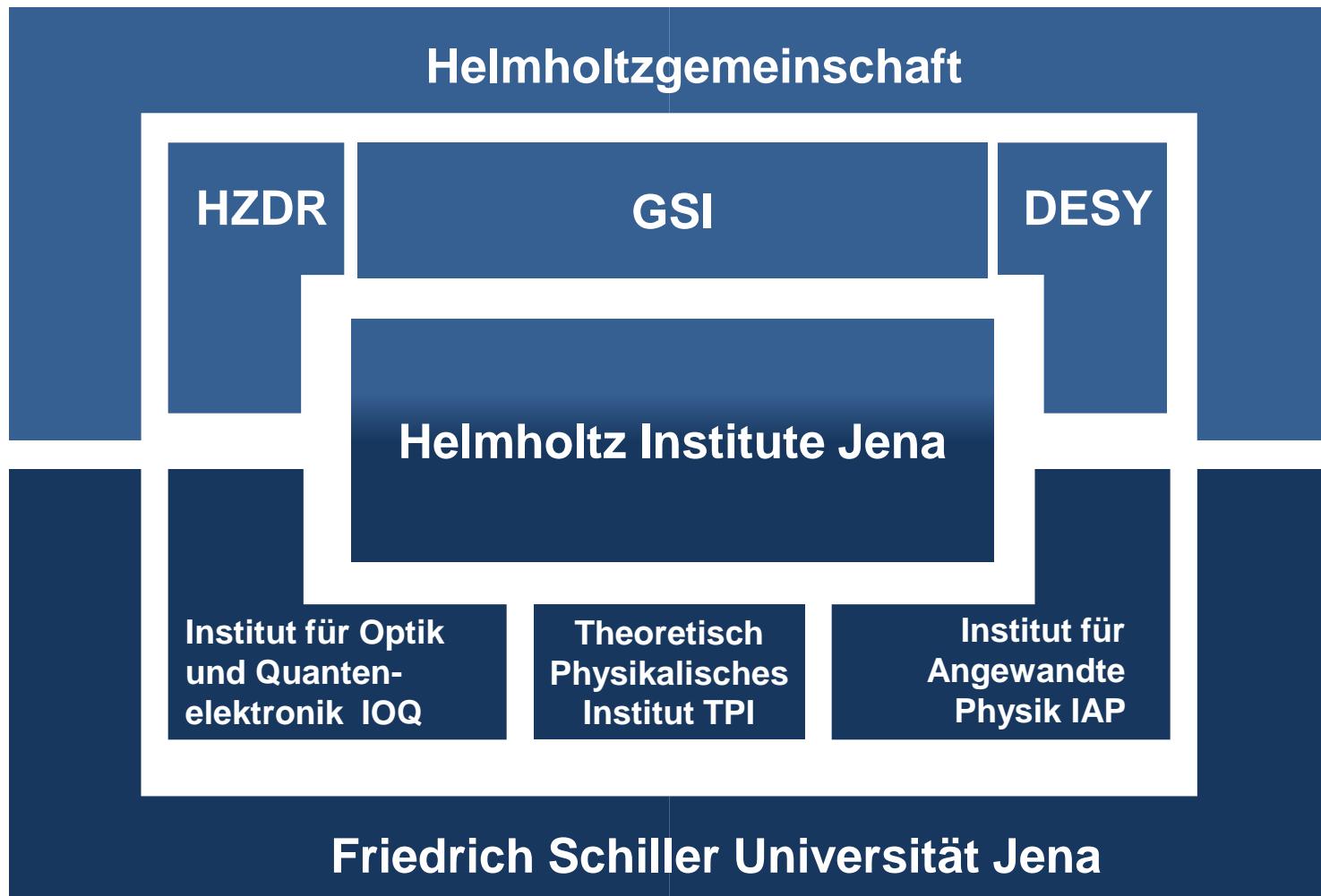
Günter Weber

HI-Jena

Karlsruhe, February 21st 2012



Structure of the HI-Jena



Helmholtz Institute Jena

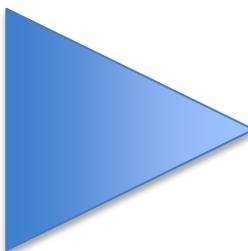


- Great expertise of the FSU in the fields of laser physics and photonics
- Research of FSU complementary to the research programs at GSI/FAIR und DESY/XFEL
- Successful scientific cooperation between GSI, DESY, HZDR, and FSU.
- Ideal conditions for the Helmholtz Institute at the FSU Jena founded in 2009.



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high power laser development



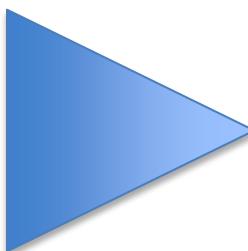
Ultra high peak power laser

1

High average power ultrafast
laser sources

2

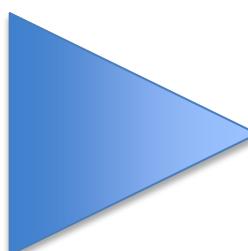
Laser particle acceleration



Fundamental research on laser
particle acceleration

3

Photon and particle
spectroscopy and diagnostics:
Experiments and theory



X-ray sources, spectroscopy
and polarimetry

4

Relativistic dynamics and
strong field QED

5



Research Fields of the HI-Jena

- Light sources for accelerators
- Optics (X-Ray) for FELs, synchrotrons, storage rings, and traps
- Advanced laser-based accelerator concepts
- Physics in extreme laser and particle fields
- Diagnostics and Detectors

Ions and Antiprotons



Photons



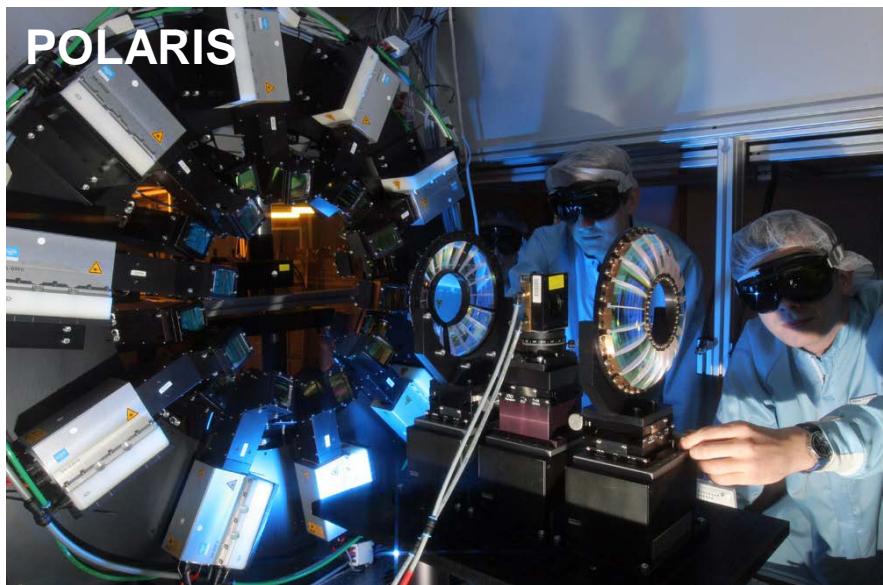
Portfolio of Facilities

Free Electron Laser

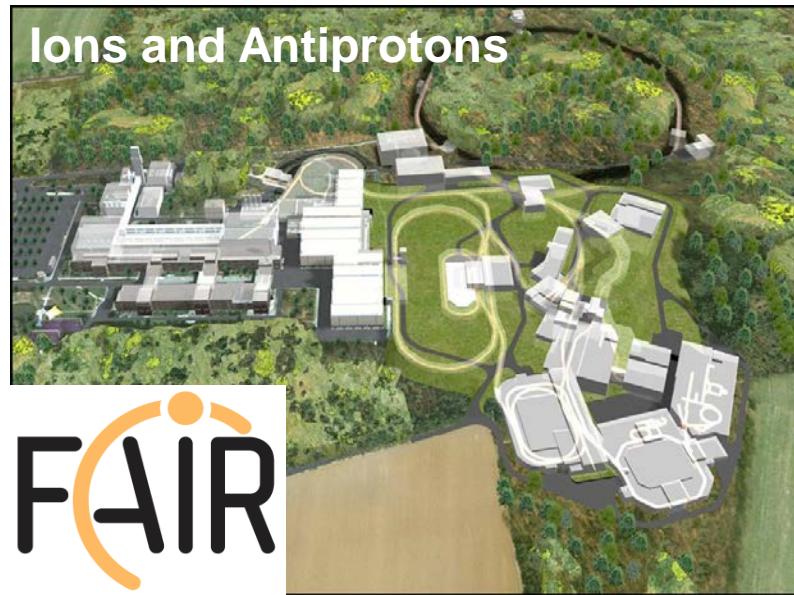


European
XFEL

POLARIS



Ions and Antiprotons



FAIR

PHELIX



GSI



DESY

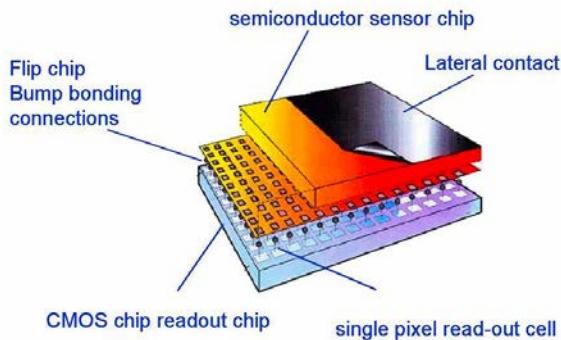
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HZDR

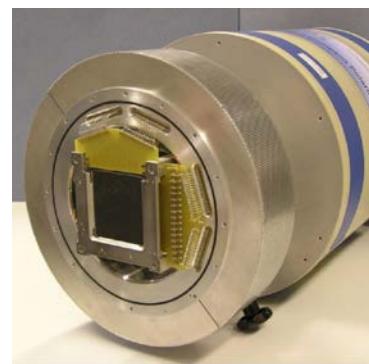
Detectors at HI-Jena

- Various experimental environments:
accelerators/storage rings, x-ray beam lines, high-power laser
- We need to detect:
x-rays (keV to MeV), (heavy) ions, electrons, visible photons

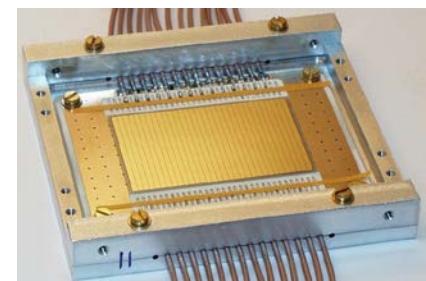
Testing ground for different detectors and detector technologies



**Medipix/Timepix
pixelated high-Z x-ray detectors**



**Si(Li) Hard x-ray
Compton polarimeters**



Diamond particle detectors

