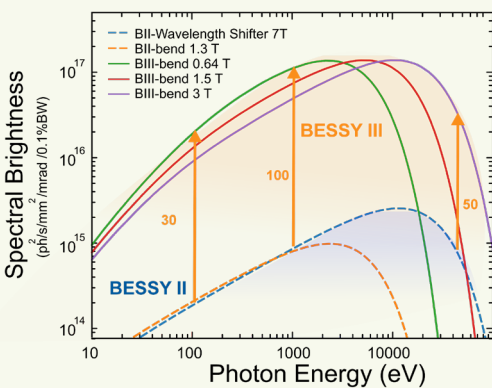
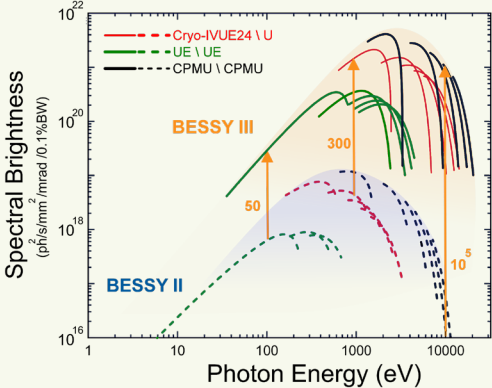


Accelerator	BESSY II	BESSY III
Energy	1.72 GeV	2.5 GeV
Circumference	240 m	367 m
Straight sections	16 (5 m long)	16 (5.5 m long)
Natural emittance	5 nm rad	100 pm rad
Zero-current bunch length (RMS)	35 ps	8 ps

Photon Sources



Anticipated source brilliance of BESSY III **undulators** (left) and **bending magnets** (right), compared to BESSY II. Wavelength shifters will not be used but be replaced by high-field dipole sources. High-harmonic generation sources will complement the very low energy range (VUV, $\approx 5\text{-}100$ eV).

Beamlines: Special Capabilities

- Continuous soft-to-tender X-rays (up to 8 keV) using multilayer-coated gratings
- Beamlines optimised for highest transmission of coherent flux
- AI-supported autonomous operation
- Nano-focus down to 100 nm with continuous energy tuning
- Ultra-high energy resolution >300000

Instrument Portfolio

- CDR portfolio: 8 Signature Instruments (thereof one for PTB) – more details in section B of the survey
- TDR phase: development of full portfolio (up to 7 additional undulator beamlines with 2 branches each & up to 13 additional bending magnet beamlines are possible)

Metrology & Highest Accuracy

- Maintain our leading position in soft X-ray metrology in cooperation with the PTB
- BESSY III will deliver highest-accuracy FAIR data for academia and industry

Connected Campus for Discovery

- Connected to Germany’s leading science & technology park Berlin-Adlershof
- Strategic embedment with partners
- Holistic multimodal problem-solving approach with overarching data concept