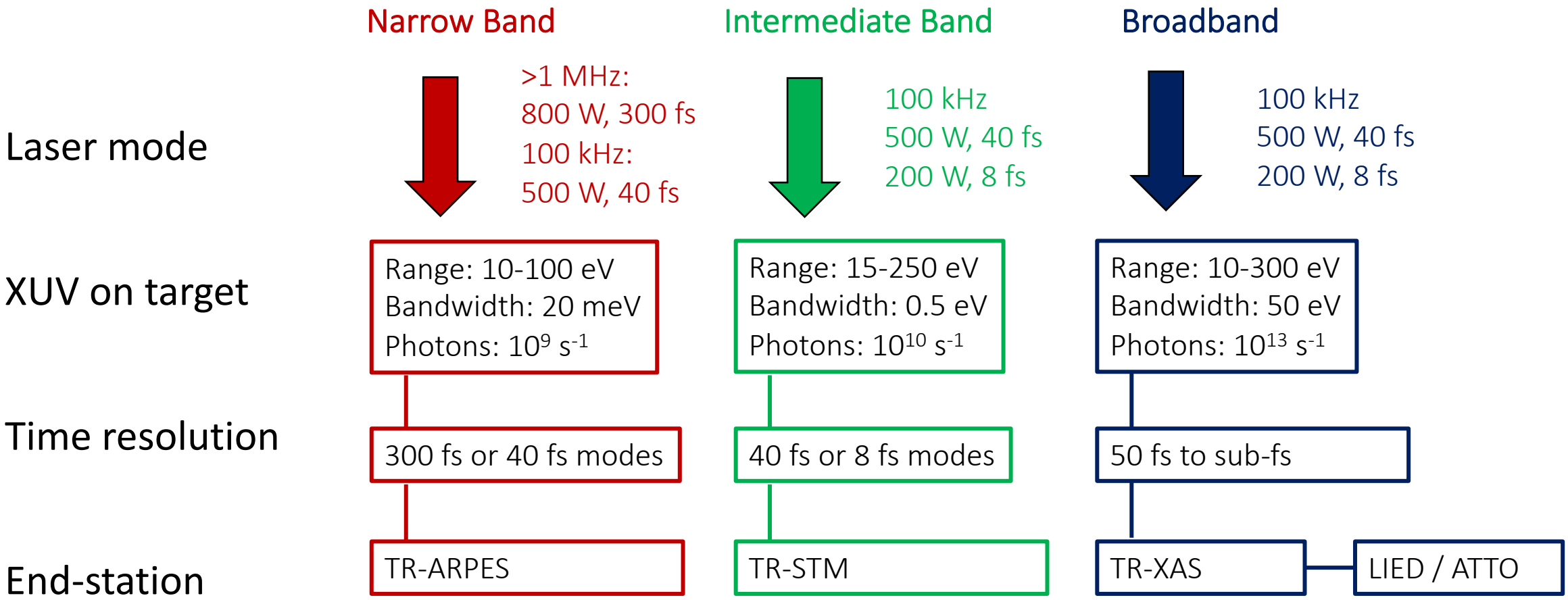
The NeXUS Facility Overview

- kW-class Ultrafast Laser:
  8 mJ at 100 kHz or 0.8 mJ at 1 MHz, pulse duration down to 8 fs
- Drive attosecond and femtosecond XUV and soft X-ray generation
- Supply XUV light to the following experimental end-stations
  - X-ray absorption / X-ray reflection spectroscopy (TR-XAS/XRS)
  - Angle-resolved photoelectron spectroscopy (TR-ARPES)
  - Element-specific scanning tunneling microscopy (TR-STM)
  - Attosecond science / Laser induced electron diffraction (ATTO / LIED)

NeXUS Delivers Custom Light to 3 Beamlines



NeXUS Time-resolved XAS/ATTO Beamline

Laser Mode	Power	Pulse duration	Wavelength (central)	Repetition rate	HHG spectral range	HHG flux (on the sample)
2	550 W	40 fs	1030 nm	100 kHz	10 – 200 eV	~10^{13} photons/s
3	230 W	8 fs	1030 nm	100 kHz	10 – 300 eV	~10^{12} photons/s
4	Up to 5-15 W	60 fs	330-2000 nm	100 kHz	For sample pumping	

NeXUS Time-resolved XAS/ATTO Beamline

Specifications :

- reflection with variable angle
- 10 - 300 eV spectral range
- 100 meV spectral resolution
- Available pump options:
  - 8 fs mode: 1030 nm, 515 nm, 343 nm
  - 40 fs mode: 1030 nm, 515 nm, 343 nm
  - 330-2000 nm tunable OPA pump (60 fs)
- Liquid sheet sample option (~200 nm thickness)
- 10 as delay line resolution

NeXUS Time-resolved ARPES Beamline

Laser Mode	Power	Pulse duration	Wavelength (central)	Repetition rate	HHG spectral range	HHG flux (on the sample)
1	800 W	300 fs	1030 nm	100 kHz – 19 MHz	10 – 70 eV	~10^9 photons/s
2	Up to 550 W	40 fs	1030 nm	100 kHz	10 – 100 eV	~10^8 photons/s
4 (only with mode 2)	Up to 5-15 W	60 fs	330-2000 nm	100 kHz		

NeXUS Time-resolved ARPES Beamline

Specifications :

- Temporal resolution: **down to 50 fs**
- Spatial resolution (PEEM mode): **~50nm**
- Spatial resolution (momentum mode): **~2µm**
- Energy Resolution: **20 meV**
- Momentum Resolution: **0.003 Å-1**
- UHV suitcase for sample transfer between systems
- Cryogenic cooling down to **9 K**

NeXUS Time-resolved STM Beamline

Laser Mode	Power	Pulse duration	Wavelength (central)	Repetition rate	HHG spectral range	HHG flux (on the sample)
2	550 W	40 fs	1030 nm	100 kHz	10 – 180 eV	~10^{11} photons/s
3	230 W	8 fs	1030 nm	100 kHz	10 – 250 eV	~10^{10} photons/s
4	Up to 5-15 W	60 fs	330-2000 nm	100 kHz	For sample pumping	

NeXUS Time-resolved STM Beamline

Specifications :

- Temporal resolution: **< 50 fs**
- Nanoscale elemental resolution
- Probe photon energy: **up to 250 eV**
- Widely tunable optical pump for time resolved experiments
- UHV suitcase for sample transfer between systems
- Active vibration isolation from beamline
- Optical access to tip-sample junction
- Variable temperature (11K-300K) with closed cycle cooling