



Wir schaffen Wissen – heute für morgen



Introduction for today's tour to PSI  
Hans-H. Braun, PSI

# Location



*Swiss national research institute*  
*Research with large facilities for external and in-house users*

## Research topics

- Material science
- Life science
- General Energy
- Nuclear Energy
- Medicine

PSI Ost

Aare

## Proton-Cyclotrons

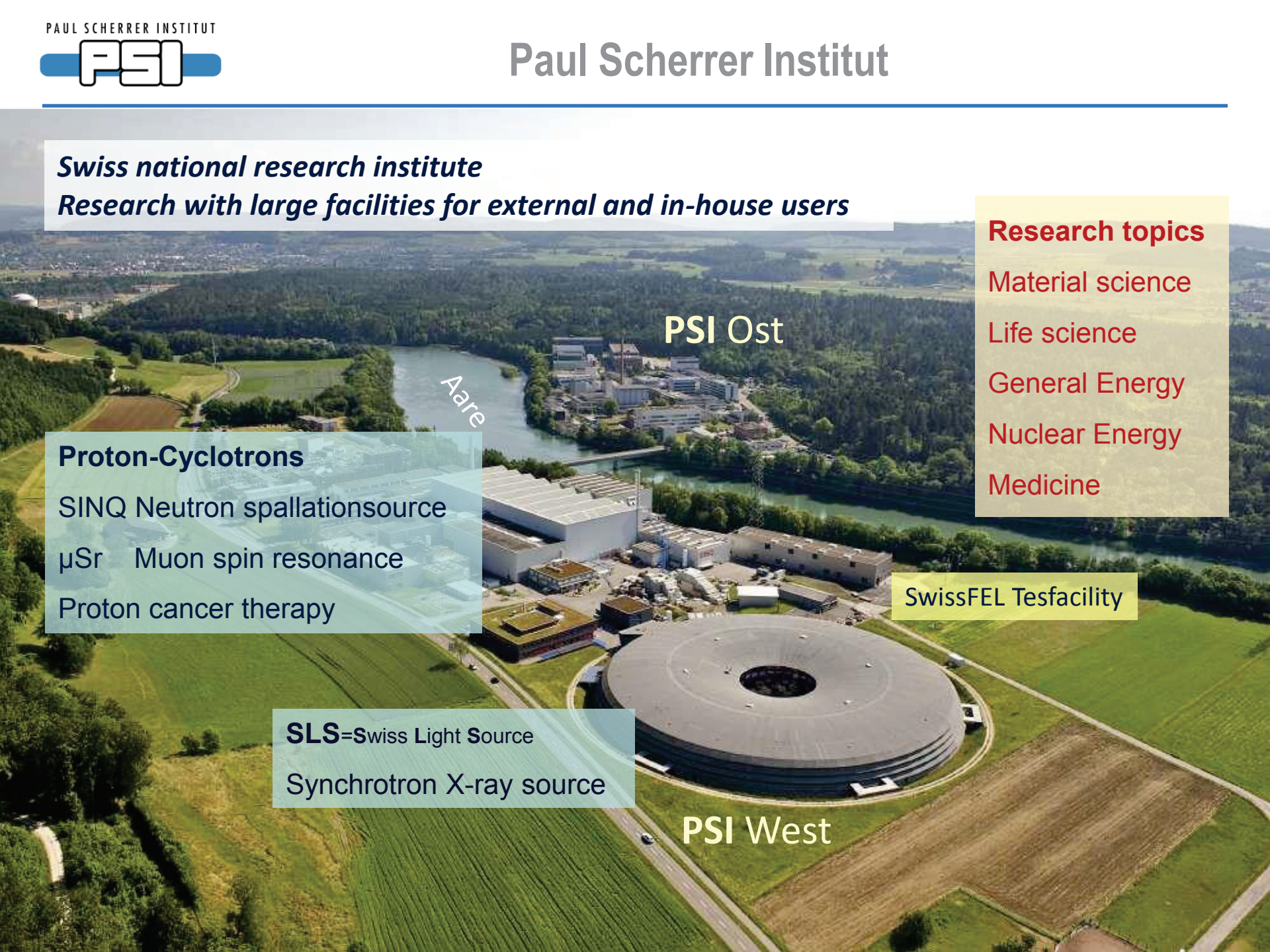
- SINQ Neutron spallation source
- $\mu$ Sr Muon spin resonance
- Proton cancer therapy

SwissFEL Test facility

**SLS**=Swiss Light Source

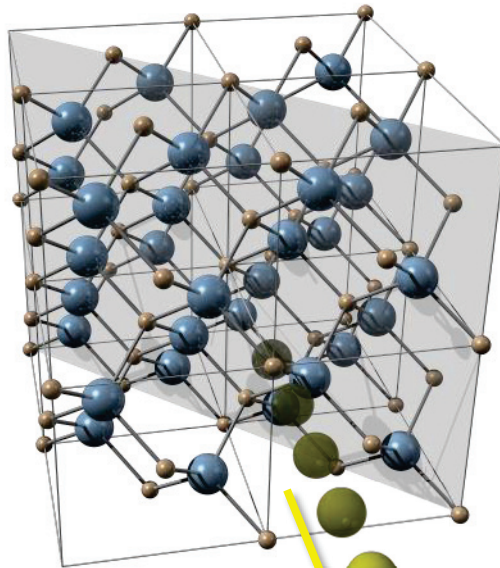
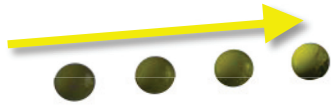
Synchrotron X-ray source

PSI West



## Research at large-scale facilities

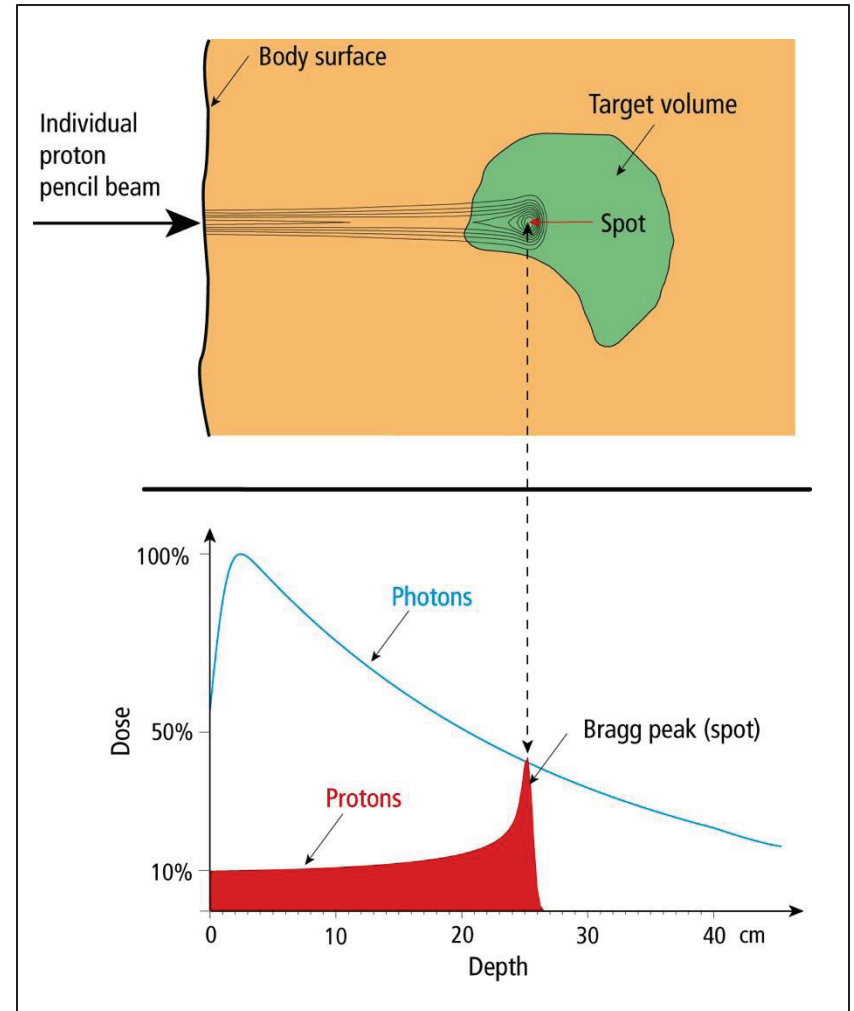
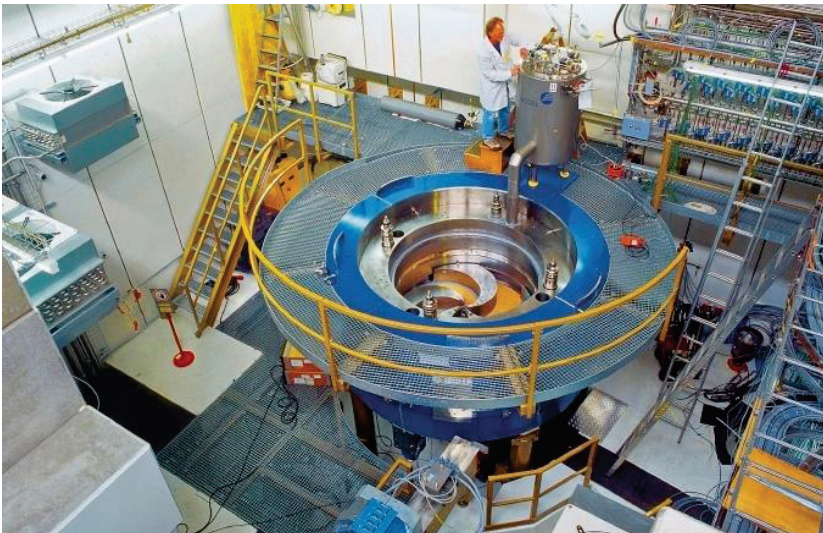
Photons  
Protons  
Neutrons  
Muons

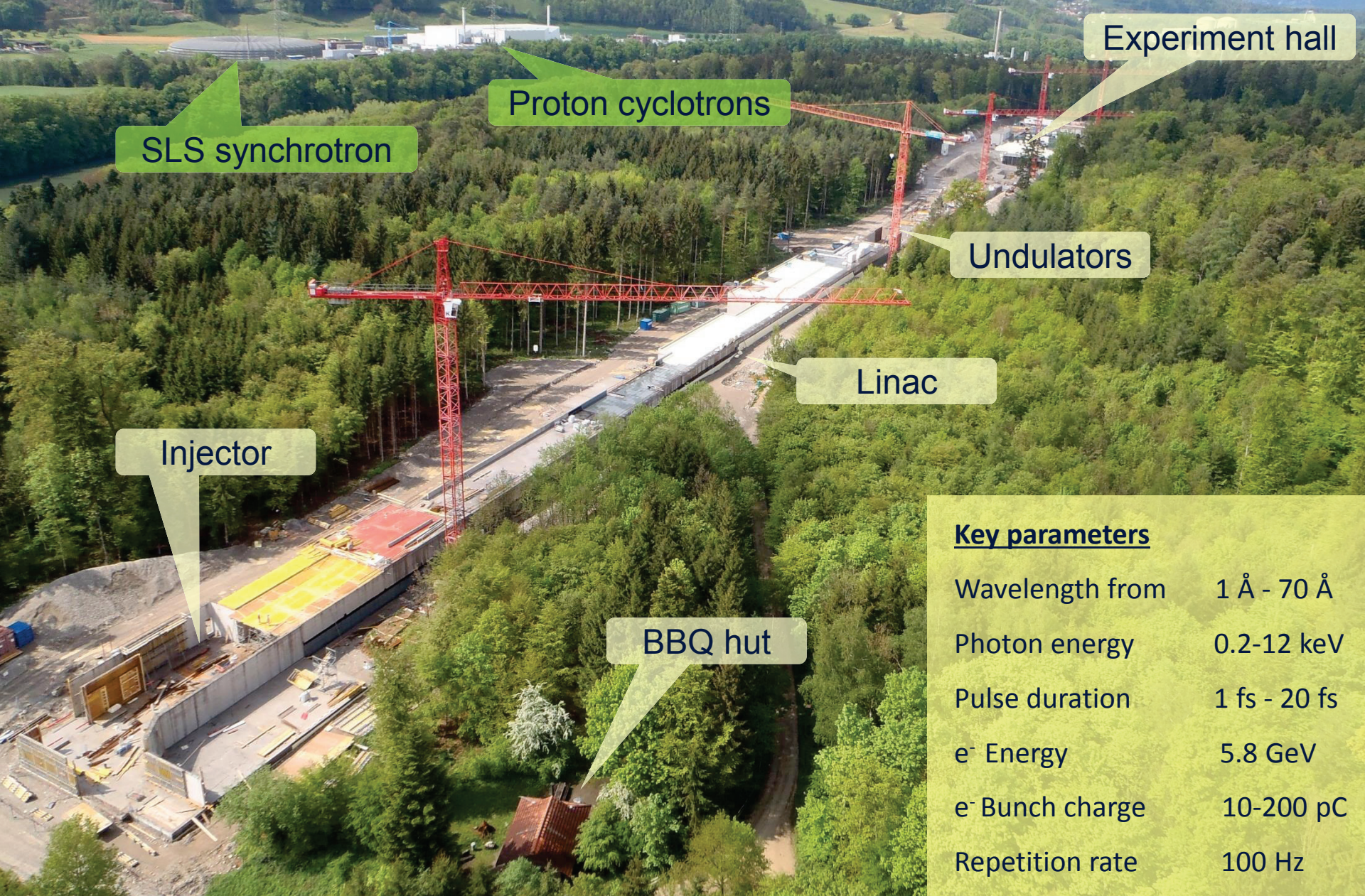


microscopic insights  
into materials



# Protons beams for cancer treatment





Experiment hall

Proton cyclotrons

SLS synchrotron

Undulators

Linac

Injector

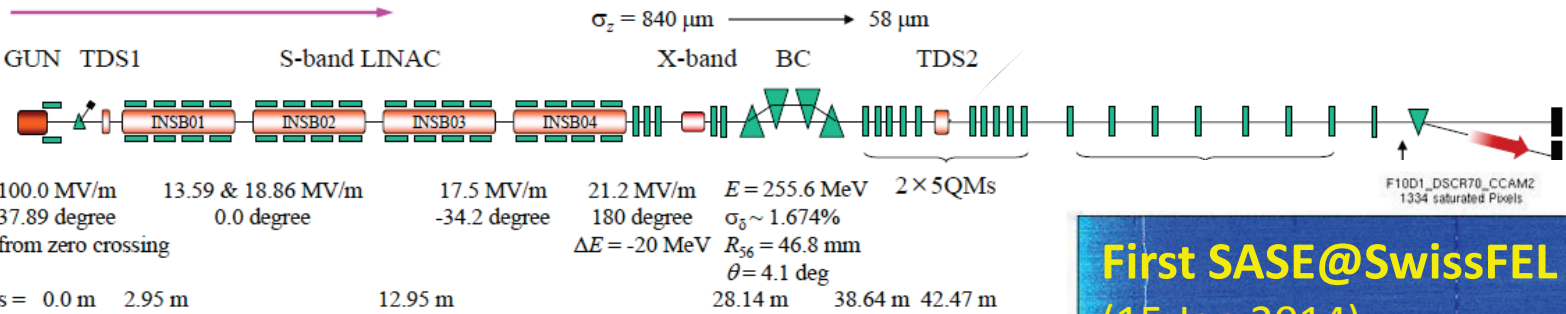
BBQ hut

**Key parameters**

Wavelength from	1 Å - 70 Å
Photon energy	0.2-12 keV
Pulse duration	1 fs - 20 fs
e <sup>-</sup> Energy	5.8 GeV
e <sup>-</sup> Bunch charge	10-200 pC
Repetition rate	100 Hz

# SwissFEL injector test facility

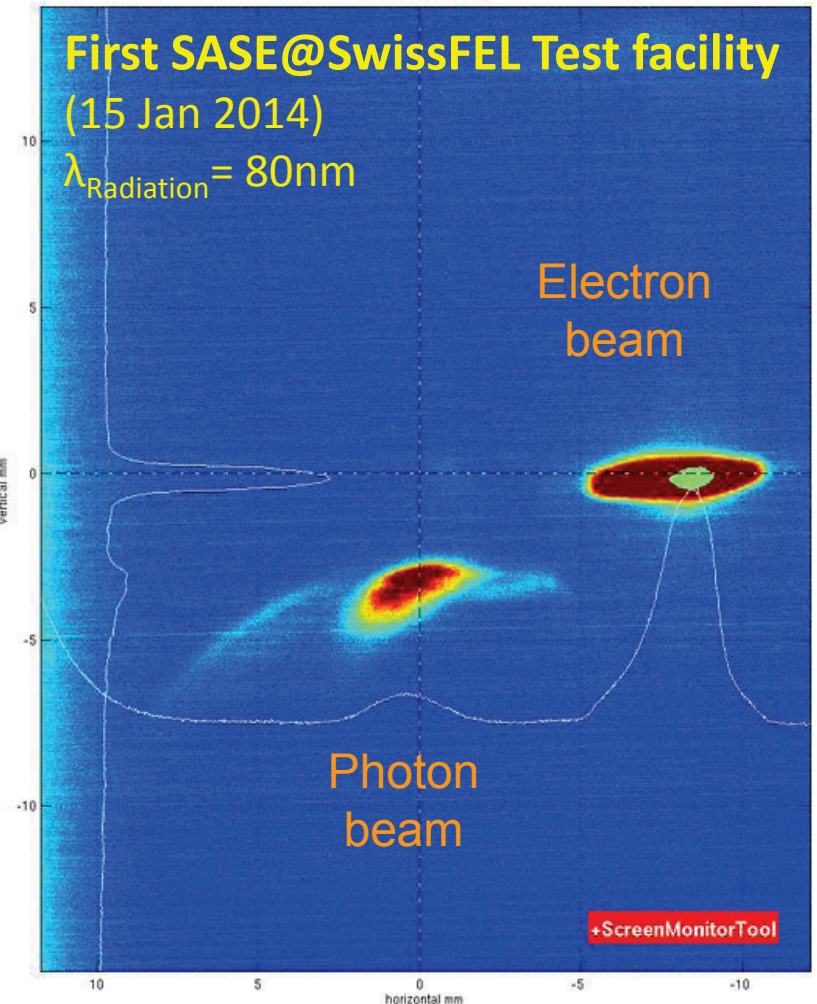
laser beam :  $\sigma_{x,y} = 270 \mu\text{m}$ ,  $\Delta T = 9.9 \text{ ps}$  (FWHM), rise & falling time = 0.7 ps  
 e-beams :  $Q \sim 0.2 \text{ nC}$ ,  $\epsilon_{\text{thermal}} = 0.195 \mu\text{m}$ ,  $I_{\text{peak}} = 22 \text{ A}$



Injector building

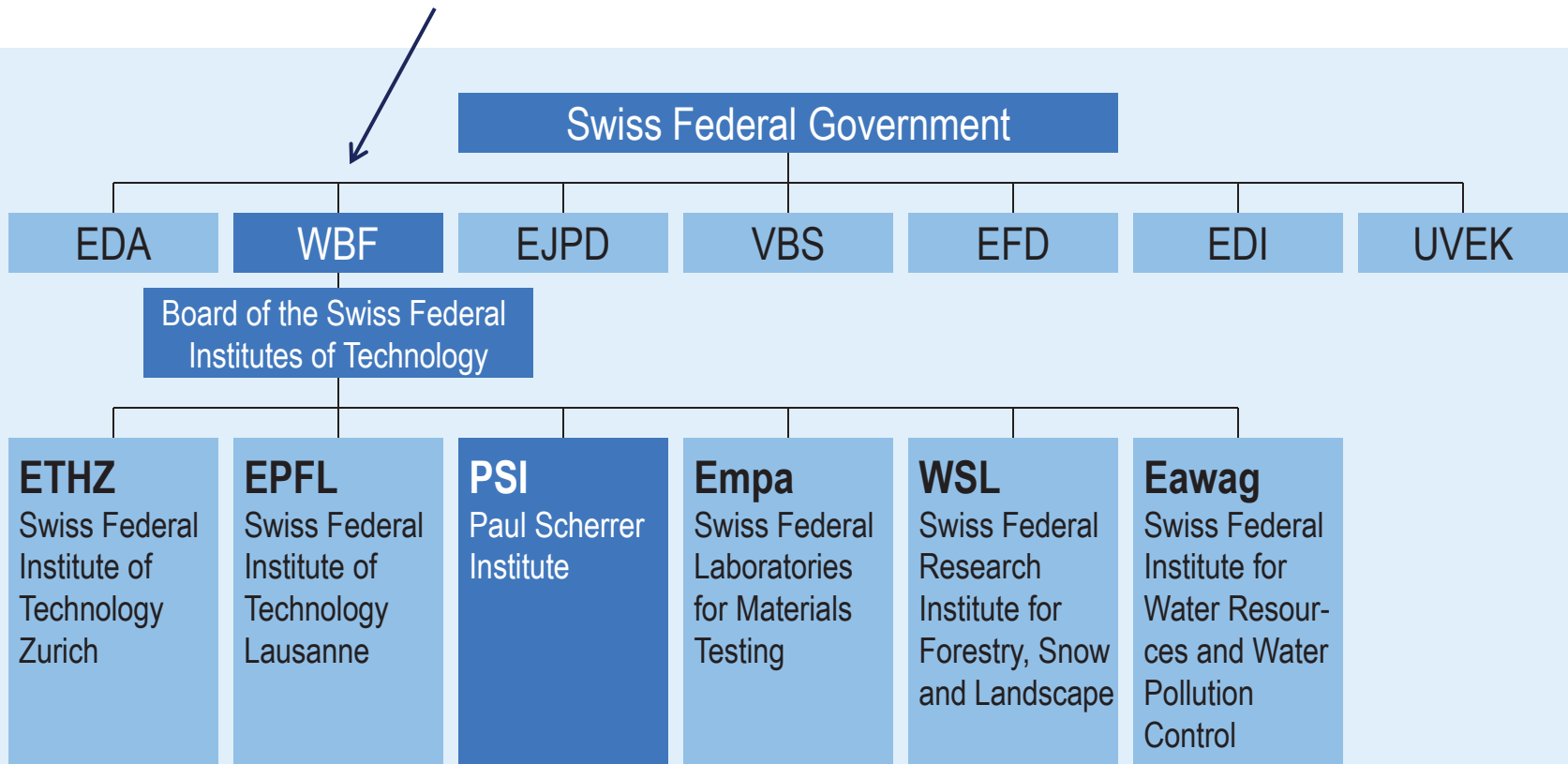


Beamline seen from gun end



# PSI governance structure

WBF = Department for economy, education and research

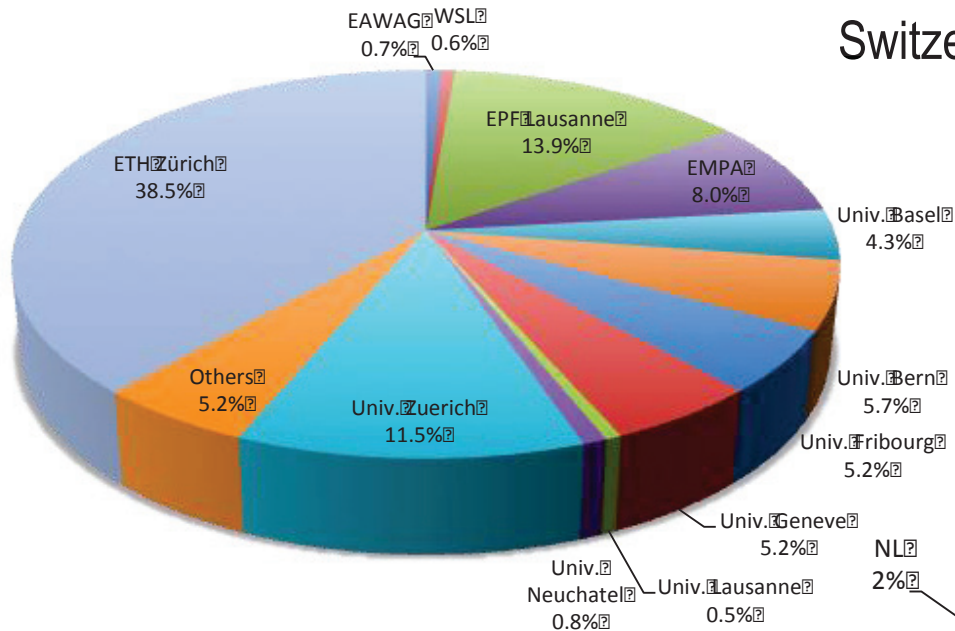




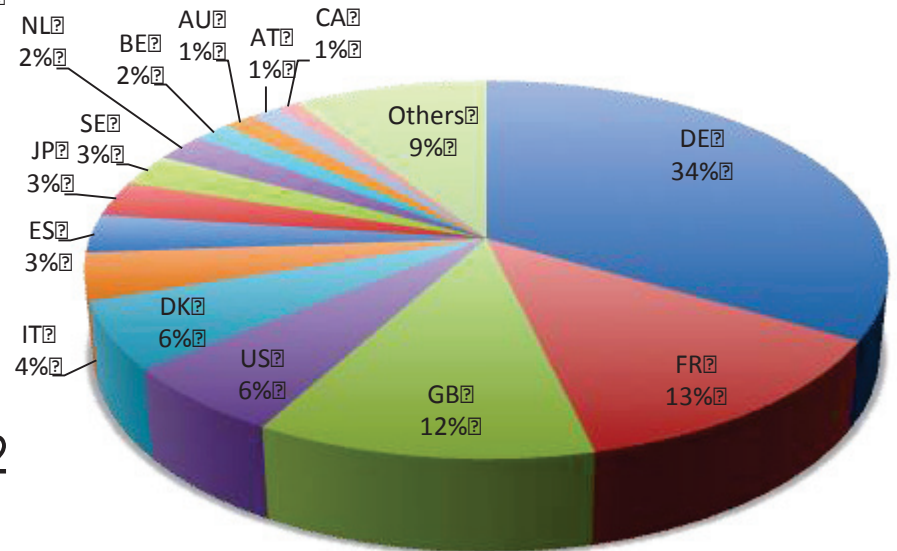
PSI funds (global budget)	~ 250	MCHF
External funding	~ 100	MCHF
Staff	~ 1900	PY
. externally financed	~ 400	PY
. doctoral students	~ 300	
. apprentices	~ 90	
External users: head counts / visits	~ 2400 / 5200	
Number of scientific publications	~ 1000	(> 10% high impact)
PSI-employees with teaching duties at ETH and universities	~ 100	
Patient's visits (proton therapy treatments)	~ 6000	

# External users – academic research

Swiss academic users (individuals)



Switzerland 1/2



international 1/2  
(EU: 84%)

14:00 - 14:15 Meeting Point entrance Congress Center, departure by coach

16:00 - 18:00 Visit of PSI and SwissFEL site



18:00 - 19:00 Apéro in front of PSI restaurant “Oase“

19:15 - 19:30 Welcome by Dr. Thierry Strässle, Chief of Staff PSI  
Presentation of the FEL prize and the young scientist award winners

19:30 - 22:00 Swiss Evening - Conference Dinner at restaurant “ PSI Oase“



22:00 Return to Basel by coach