Welcome Address
Workshop on Efficient Neutron Sources, ARIES, 2-5 Sep 2019
Paul Scherrer (1890–1969)

- Studied physics and mathematics at the Swiss Federal Institute of Technology (ETH) Zurich, in Koenigsberg and in Göttingen, Germany

- 1920: professor of experimental physics at ETH Zurich; 1927: Director of the Institute of Physics. Was famous for the clarity of his lectures

- Researched x-ray scattering on crystals, liquids and gases. Later research work was in nuclear physics

- 1946: President of the Swiss Study Commission on Atomic Energy

- Involved in the foundation of CERN
Administrative Embedding

Swiss Federal Government

EDA | EDI | EJPD | VBS | EFD | WBF | UVEK

ETH Domain

ETHZ
Swiss Federal Institute of Technology Zurich

EPFL
Swiss Federal Institute of Technology Lausanne

PSI
Paul Scherrer Institut

Empa
Swiss Federal Laboratories for Materials and Testing

WSL
Swiss Federal Institute for Forest, Snow and Landscape Research

Eawag
Swiss Federal Institute for Water Resources and Water Pollution Control

ETH Board
## Key Figures

<table>
<thead>
<tr>
<th>Category</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PSI funds (global budget)</strong></td>
<td>280 MCHF</td>
<td></td>
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<tr>
<td><strong>External funding</strong></td>
<td>110 MCHF</td>
<td></td>
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<tr>
<td><strong>Staff (heads)</strong></td>
<td>2100</td>
<td></td>
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<tr>
<td>• Externally financed</td>
<td>750</td>
<td></td>
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<tr>
<td>• Doctoral students</td>
<td>320</td>
<td></td>
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<tr>
<td>• Apprentices</td>
<td>100</td>
<td></td>
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<tr>
<td><strong>External users: people / visits</strong></td>
<td>2300 / 4800</td>
<td>per year</td>
</tr>
<tr>
<td><strong>Number of scientific publications</strong></td>
<td>1400 (13 % high impact)</td>
<td>per year</td>
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<tr>
<td><strong>PSI employees with teaching duties at both ETH and universities</strong></td>
<td>100</td>
<td></td>
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<tr>
<td><strong>Patient visits (proton therapy treatment)</strong></td>
<td>5900</td>
<td>per year</td>
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Our Mission

- Matter and materials
- Energy and environment
- Human health
- Large research facilities
- Swiss and foreign users from academia and industry
- Development
- Construction
- Operation
- Knowledge & expertise
- Education
- Technology transfer
- More than 2400 external users/year (39 beamports)
Distribution to main research areas (first- and third-party funding)

Materials Research 35 %

Life Sciences 25 %

Particle Physics 8 %

Nuclear Energy and Safety 13 %

Energy and Environment 19 %
Research at large facilities

- Synchrotron Light Source SLS
- Spallation Neutron Source SINQ
- Muon Source SµS

Photons
Neutrons
Muons

Microscopic insights into materials
New Large Research Facility SwissFEL

**Synchrotron light**
fine, slow

**Optical laser light**
coarse, fast

**SwissFEL**
fine and fast at extremely high intensity

New, direct insights into physical, chemical and biological processes governing our everyday lives

a national free-electron x-ray laser for Switzerland

2016
... for **energy**: development of new materials for batteries and emerging technologies.

... for the **environment**: distribution of soot in particle filters.

... for **human health**: encapsulation of medical agents in liposomes for targeted drug delivery in the body.
Research for **efficient use of alternative energy carriers** and **energy storage**

Analysis of **climate data** and **environmental pollution**

Research on the **security** of nuclear power plants and geological repositories
Human Health

**Structure of proteins**
for the targeted development of new drugs

**Radio pharmaceuticals**
for the diagnosis of tumours

**Proton therapy**
for
- destruction of tumours
- protection of healthy tissue

Outside of cell

Light sensor
Vitamin A

faulty building block

Inside of cell