

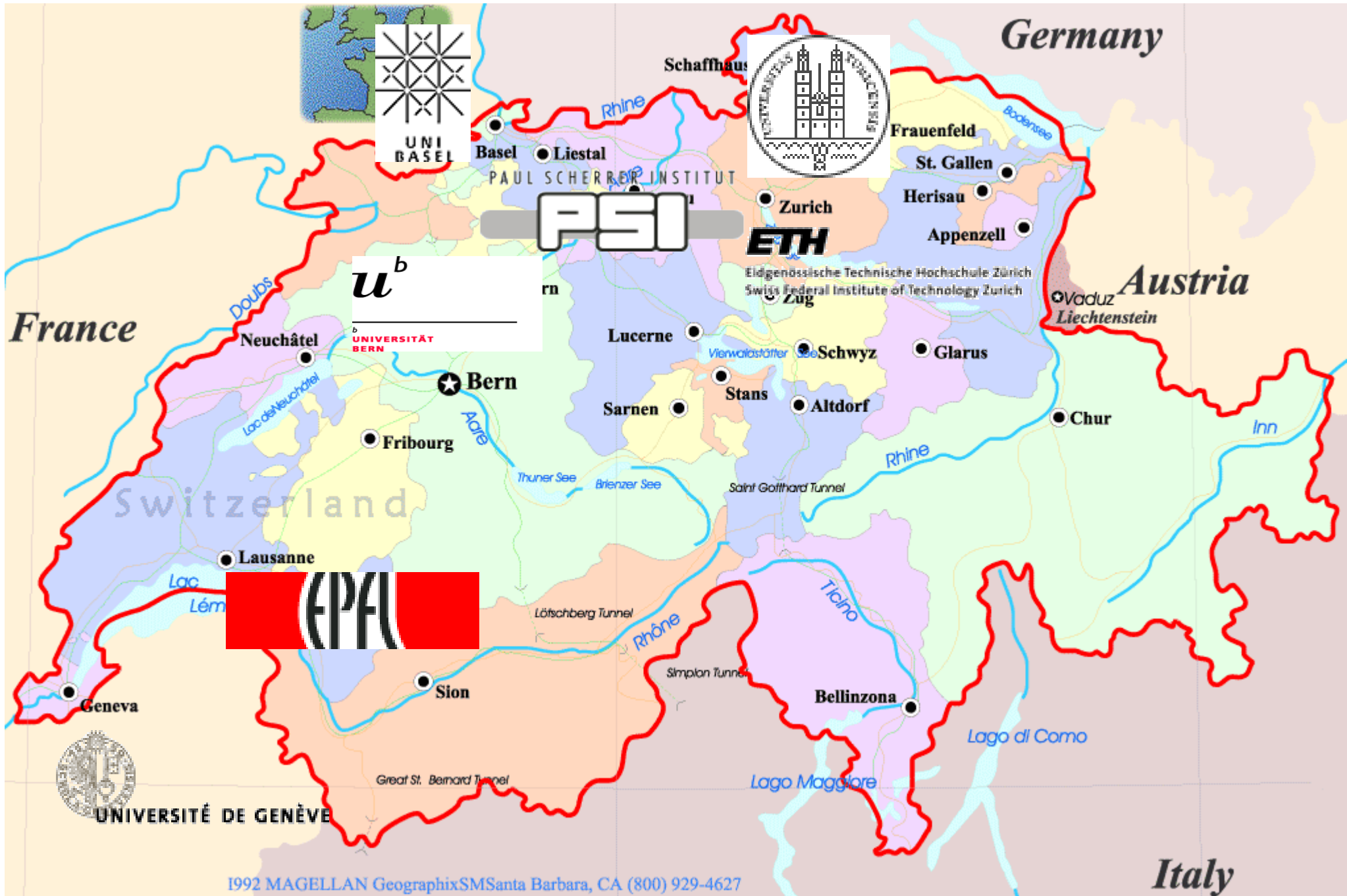
Overview of theoretical particle physics in Switzerland

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UNIVERSITÄT
BERN

CHiP
Swiss Institute of
Particle Physics



Theory Groups

	prof+staff	postdoc	PhD
• Uni Basel	• 2+0	2	8
• Uni Bern	• 6+2	10	12
• Uni Geneva	• 3+3	7	9
• EPFL Lausanne	• 2+3	11	7
• PSI	• 0+2	4	2
• Uni Zurich	• 2+3	7	10
• ETH Zurich	• 3+1	5	4
• Total	• 18+14	43	54

Uni Basel

BSM, neutrino physics, nuclear astrophysics

- Full professors
 - Antusch: early universe, BSM, neutrino physics
 - Thielemann: nuclear physics, numerical simulations of explosive astrophysical events, nucleosynthesis

ITP Uni Bern

Lattice QCD, ChPT, K and B physics, SUSY, strings, gravity

- Full professors
 - Blau *string theory, quantum gravity, GR, mathematical aspects of QFT*
 - Becher *collider physics, precision calculations, SCET and other EFT*
 - Colangelo *ChPT for pheno and lattice, flavour physics in SM and beyond*
 - Derendinger *model building in superstrings and supergravity, SUSY*
 - Laine *thermal field theory, QCD, particle cosmology*
 - Wiese *lattice gauge theories, simulations of condensed matter systems*
- Other staff members
 - Greub: *QCD effects in B physics, B rare decays*
 - Wenger: *lattice QCD, finite baryon and isospin density, SUSY on lattice*

Uni Geneva

Cosmology, astrophysics, string theory and relations to particle physics

- Full professors

- Durrer: CMB anisotropies, interpretation and data analysis, braneworlds, cosmological phase transitions, cosmic strings
- Maggiore: gravitational waves, astrophysics and cosmology
- Riotto: Inflation and the cosmological perturbations, CMB anisotropy, Large Scale Structure, Dark Matter, Baryon asymmetry

- Other staff members

- Desjacques (SNF): Large Scale Structure, Inflation, Dark Matter
- Foffa: gravitational waves, general relativity
- Kunz: Dark energy, CMB, Topological defects, Inflation, Modified gravity

ITP EPF Lausanne

Cosmology, QFT, string theory and particle physics, electroweak SB, beyond the SM, QCD

- Full professors

- Rattazzi QFT, electroweak SB and the LHC, BSM: Grand Unification, Supersymmetry, Supergravity
- Shaposhnikov baryon asymmetry, phase transitions in GT and cosmology, extra dimensions, cosmic rays and magnetic fields

- Other staff members

- Lesgourgues (6y joint CERN) cosmology
- Sibiryakov (6y joint CERN) cosmology
- Contino (6y joint CERN) Higgs physics

PSI Theory Group

Electroweak Precision Physics, Higgs Physics,
Supersymmetry, Effective Field Theories

- Permanent staff
 - Signer Effective field theories, collider physics, unstable particles
 - Spira Higgs physics, supersymmetry, pert. QCD, leptoquarks, compositeness

ITP Uni Zurich

Collider physics, SM and beyond, B physics, neutrinos

- Full professors
 - Gehrman Precision calculations for collider observables in the standard model, event simulation, properties of scattering amplitudes, development of computer algebra tools
 - Isidori physics beyond the SM, Higgs, flavour, neutrino physics
- Other Staff members
 - Grazzini QCD precision calculations for LHC, Higgs physics
 - Pozzorini (SNF) QCD and electroweak loop calculations, automatization

ITP ETH Zurich

Collider physics, perturbative QCD, lattice QCD, string theory

- Full Professors
 - Anastasiou **Perturbative methods, QCD, Higgs physics, electroweak precision measurements at hadron colliders**
 - Gaberdiel **mathematical aspects of string theory and conformal field theory**
 - Beisert **mathematical aspects of quantum field theory**
- Other staff members
 - Aude Gehrmann **higher order QCD calculations**
 - De Forcrand **Lattice QCD, finite temperature and baryon density**

Main focus of the Institutes

Basel

BSM, neutrinos, nuclear astrophysics

Bern

Nonpert. QCD, EFT, flavour and collider physics, BSM, strings

Geneva

Cosmology, astrophysics ↔ particle physics

Lausanne

BSM, cosmology, pert. QCD, strings

PSI

Higher loop calculations for HEP, SUSY, EFT

ETH Zurich

Higher loop calculations, mathematical aspects of QFT, strings

Uni Zurich

Higher loop calculations, BSM, flavour, astrophysics

Summary

- Theoretical particle physics in Switzerland currently covers the following fields
 - LHC precision calculations (ew, QCD, Higgs physics etc.)
 - BSM (strings, model building, mathematical aspects of QFT, phenomenology)
 - Cosmology, astrophysics, connections to particle physics
 - Nonperturbative QCD (numerical and EFT)
 - Flavour physics (B and K physics, leptons)
- Hadronic physics still quite present
- Nuclear physics, in a strict sense, not anymore