

# Lattice Field Theory @ CERN

## Team members

Stefan Schaefer (staff)

Andrea Shindler (Heisenberg fellow)

Agostino Patella (fellow)

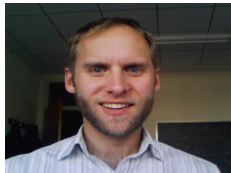
John Bulava (fellow)



Agostino

## Long-term guest

Philippe de Forcrand (ETH)



John

## Lattice QCD

- Shed light on dynamical mechanisms
- Mass spectrum & matrix elements
- $\Rightarrow$  Precision tests of QCD
- QCD in unusual conditions

## BSM

- Proton decay, EDM, ...
- QCD-like CFT
- SUSY

## Recent work at CERN

Make QCD simulations fast & reliable

- Domain decomposition, local deflation . . .
- Open boundary conditions
- Yang–Mills gradient flow

*Simulations at physical quark masses are now feasible  
and will be common place in the coming years*

## Recent work at CERN (cont.)

### Heavy-light mesons

- Non-perturbative HQET  $\leftrightarrow$  QCD matching
- $m_b, f_B, f_{B_s}, \dots$

### Conformal gauge theories

- Anomalous mass dimension from spectral density
- Particle content of nearly conformal theories

...

## We are a small team

- ⇒ “Industrial” lattice QCD is not an option
- ⇒ Focus on developing new concepts & techniques
- ⇒ Networking is important (ALPHA, CLS, ...)

See <http://cern.ch/luscher/> for lectures, talks, ...