

FCC Higgs and EW Symmetry Breaking

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Introduction

- Welcome to the **kick-off meeting** for the **Higgs and Electroweak Symmetry Breaking sub-group** for the FCC-pp collider
- Reminder: what is the FCC project ?
 - Following a recommendation of the European Strategy report, in Fall 2013 CERN Management set up the FCC project, with the main goal of preparing a Conceptual Design Report by the time of the next ES (~2018)
 - CDR main scope: physics motivations, technical feasibility (e.g. tunneling, magnets), design (machine, experiments, ..), cost
- FCC kick-off meeting took place on 12-15 February 2014 at University of Geneva
 - <http://indico.cern.ch/event/282344/timetable/#20140212.detailed>
 - Very successful, almost 350 participants, strong international interest

Overall FCC Structure

Main areas for design study

Preparatory group
for a kick-off meeting
=> Steering committee

See talk by
M.Benedikt's

Machines and
infrastructure
conceptual designs

Infrastructure

Hadron collider
conceptual design

Hadron injectors

Lepton collider
conceptual design

Safety, operation, energy
management
environmental aspects

Technologies
R&D activities
Planning

High-field magnets

Superconducting RF
systems

Cryogenics

Specific technologies

Planning

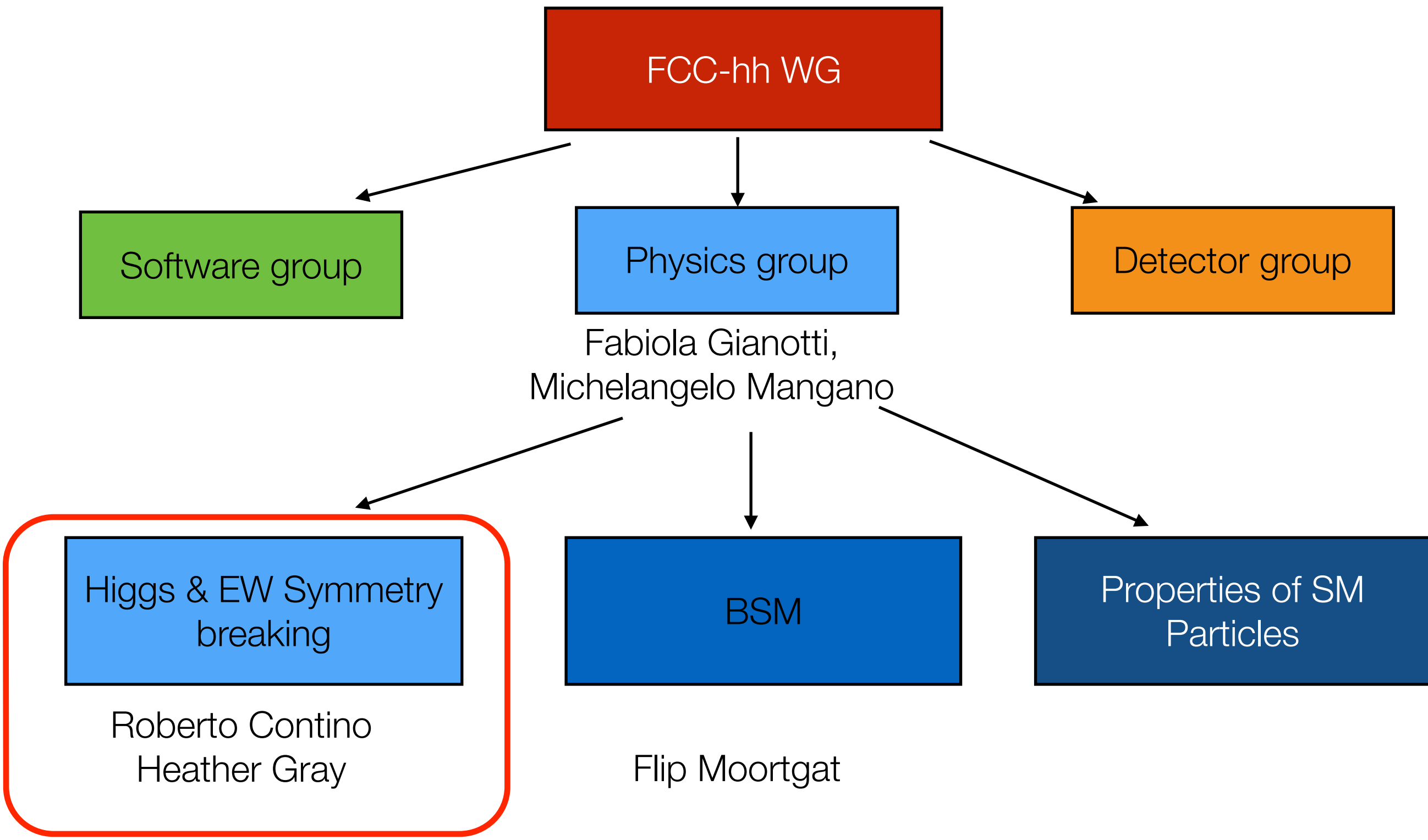
Physics experiments
detectors

Hadron physics
experiments
interface, integration

$e^+ e^-$ coll. physics
experiments interface,
integration

$e^- - p$ physics and
integration aspects

FCC-hh structure



FCC Higgs & EW Symmetry Breaking

- Goal today: detailed discussion of **topics** and **goals** for the working group
- Proposed topics
 - Precision studies of **Higgs Properties**; **Rare Higgs** production and decays
 - High-mass **WW scattering**, high-mass **HH production**
 - Additional **BSM Higgs bosons**: discovery reach and precision physics program
 - New handles on the study of **non-SM EWSM dynamics**
- Format: Short 2-slide presentations covering ongoing, future or propose work
 - Allow as much time for discussion and brainstorming as possible

Upcoming Meetings

- Higgs and BSM @ 100 TeV workshop, CERN, March 11-13 2015
 - <https://indico.cern.ch/event/352868/>
 - The workshop will feature short, focused talks, accompanied by ample discussion time. It will serve as an intermediate step towards the preparation of the Report on the Physics opportunities of 100 TeV, to be completed by end of 2015.
- FCC week 2015, Washington DC, 23-27 March 2015
 - <http://indico.cern.ch/event/340703/>
 - Plenary meeting of the whole FCC effort, covering all topics from technology to physics, and all physics programs (ee, eh, hh, HI, injectors)

Documentation & Organisation

- Higgs & EWSB twiki: <https://twiki.cern.ch/twiki/bin/view/LHCPhysics/HiggsEWSymmetry>
- FCC hh twiki: <https://twiki.cern.ch/twiki/bin/view/LHCPhysics/FutureHadroncollider>
- We will take detailed notes based on the discussion and develop a workplan on the twiki
- We suggest having monthly (?) meetings to make regular progress in preparing for the workshops in March 2013
 - Aim is to make significant progress on this timescale