

# HiggsTools Kickoff Meeting



**higgstools**

# Goals of Meeting

- Information Transfer
  - Legal requirements
  - Practical details
- Discussions on how we will operate
  - Recruitment
  - Training
  - Use of the budget
  - Publications
  - Webpage
  - Information transfer
  - How best to take advantage of the composition of the network to make impact in Higgs physics

# Agreements/Policies

- criteria for recruitment, together with a clear plan of how we are going to get the necessary recruitments (and at which point we take action on defaulting nodes)
- usage of cat 3 money
- secondments
- acknowledgements of research papers  
use of the webpages - entering publications, news items and events
- how the network will operate both in TH-TH and TH-EXP interactions
- Consortium agreement
- To be developed during the meeting and approved at the Supervisory Board Meeting

# Schedule: Wednesday

- 14:00 - 15:30
  - Report from Coordinators Meeting in Brussels
- 16:00 - 17:00
  - Discussion - Issues from Report
- 17:00 - 18:00
  - Recruitment
    - Discussion of procedures and criteria
    - First look at applications

# Schedule: Thursday a.m.

## ➤ 9:00 - 11:30

### ➤ Projects

- A three slide summary of each of the 21 ESR projects.
- The slides should be self contained and cover
  - a) why? b) what? c) fit within the network.
- We will add a fourth slide about the supervisor (photo + bio) – see example and compile the slides into a booklet – two slides per page, two pages per project, which we can use for advertising

## ➤ 11:30 - 12:30

- Discussion of current applications
- Discussion of how to go about recruiting 21 ESR

# Schedule: Thursday p.m.

## ➤ 14:15 - 17:15

### ➤ Nodes

- A 10 slide summary of each node. Each talk should state every person involved from that node, and how they contribute to the activity of the network.
- Summarize the expertise of the node
- Identify collaborations with other nodes
- Links with activities outside the network
- We will make a further booklet based on these slides about the network.

## ➤ 17:15 - 18:15

### ➤ Network Activities

- Forward planning of training events
- Synergies

# Schedule: Friday a.m.

## ➤ 9:30 - 10:30

### ➤ Partners

➤ Maple – Dave Hare

➤ Brook Lapping – Steve Wilkinson

## ➤ 11:00 - 13:00

### ➤ Supervisory Board Meeting

➤ Consortium Agreement

➤ Discussion of issues arising from the kickoff meeting

➤ Discussion of draft policy documents

# Recruitment



# Eligibility

1. Must be, at the time of recruitment, in the first four years (full-time equivalent) of their research careers and have not yet been awarded a doctoral degree. This is measured from the date when they obtained the degree which would formally entitle them to embark on a doctorate, either in the country in which the degree was obtained or in the U.K., irrespective of whether or not a doctorate is envisaged.
2. At the time of recruitment by the host organisation, must not have resided or carried out their main activity (work, studies, etc.) in the host country for more than 12 months in the 3 years immediately prior to the reference date. Short stays such as holidays and/or compulsory national service are not taken into account.
3. At the starting time of the positions the candidates must have completed the courses that would have allowed them to enrol in a doctorate program either in the country where they are studying or in the host country.
4. Recruitment date to determine eligibility to be chosen?

# Criteria for selection - agreed

- First level

- Eligible
- Academic quality of candidate
- Evidence of commitment to subject
- Fit with the specific ESR position
- Satisfactory recommendation letters

## Second Level

- Must have satisfactory interview (panel)

# Person Specification - draft

1. The successful candidates will have an excellent academic record in physics and related studies
2. A keen interest in pursuing research in experimental or theoretical particle physics and in particular Higgs physics.
3. Demonstrable ability to work independently, and as a member of a research team.
4. Excellent interpersonal and communication skills.
5. He/she will play a role in maintaining the host Institute as a world-class centre of phenomenology research and be an active member of the HiggsTools FP7 ITN.
6. Candidates must satisfy the eligibility criteria.

# Responsibilities - draft

1. Perform research in LHC phenomenology in the area of Higgs Physics under the supervision of the chosen supervisory team.
2. Meet the members of the supervisory team on a regular basis.
3. Participate in the activities of the Network as specified in the Grant Agreement and/or required by the node coordinator, including secondments in other network nodes and taking part in the network meetings and in the training activities.
4. Write up the results of the research activity and present research papers and publications at meetings and conferences, as advised by the supervisors.
5. Widen the personal knowledge in the research area and undertake complementary training.
6. Keep records of the activities, such as secondments, visits, leave of absence.

## ESR 3

- **Host:** IPPP Durham
- **Period:** October 2014 - September 2017
- **Junior ESR** (PhD Position in Theoretical Physics)
  - First 16 months funded by HiggsTools, last 20 months funded by University of Durham studentship
- **Work Package 2**
  - Task 2.1: Improved predictions for Standard Model-like Higgs scenarios
- **Supervisor:** Nigel Glover (IPPP Durham)
  - Co-supervisor: Thomas Gehrmann (University of Zurich)
  - Secondment: University of Zurich

*The candidate will work on the phenomenology of Higgs Boson production at high transverse momentum. Specifically the NNLO QCD corrections to Higgs production accompanied by a jet in the infinite top mass limit and other state of the art calculations.*



## WHY?

- LHC running at 13 TeV starting in 2015 will produce many Higgs Bosons enabling study of properties of the Higgs.
- Copious production rate of Higgs Bosons with large transverse momentum give the opportunity of studying difficult decay channels exploiting the particular kinematic properties of the “boosted” Higgs.
- In this configuration, the decays into bottom quarks or tau leptons are more collimated and the events look different.



## WHAT?

- This project will build on previous work in Durham/Zurich in constructing a parton level NNLO code for Higgs plus jet production and will benefit from expertise in precision calculations for LHC.
- Aim is to produce a state of the art description of “Boosted Higgs” production and decay.
- Expected collaboration via secondment with University of Zurich, and opportunities for developing
  - interface with the parton shower (UDUR)
  - electroweak and finite mass corrections (ALU-FR)
  - interface into experimental analyses (ATLAS/CMS)



## ESR3: Nigel Glover



Professor Nigel Glover FRS,  
IPPP, Durham University

My interest in high energy particle physics dates from approximately 10.20 a.m. on the 17th November 1981 during a 3rd year lecture at Cambridge when Richard Ansorge explained that all matter was made of quarks and leptons. Shortly thereafter I began work on a Ph.D. under the enthusiastic direction of Professor Alan Martin FRS at Durham.

The main goals were (and still are) to study the fundamental forces and particles of nature using information gained in high energy particle physics experiments. My PhD thesis was titled Studies in high energy proton-antiproton collisions.

This research has taken me back to Cambridge (185-87) and to the major international accelerator laboratories at CERN, Geneva (1987-89) and Fermilab, Batavia (1989-91). In 1991 I returned to Durham. I was promoted to Reader in 1996 and to Professor in 2002 and have since held a PPARC Senior Fellowship (2003-6) and a Wolfson Research Merit Award (2008-13). I was Director of the Institute for Particle Physics Phenomenology (2005-10) and elected as a Fellow of the Royal Society in 2013.

Since coming to Durham I have supervised 18 PhD students, 6 of whom now hold faculty positions.