



LHCPhenoNet Annual Meeting

Lumley Castle County Durham

19-22 March 2012

LHCphenOnet

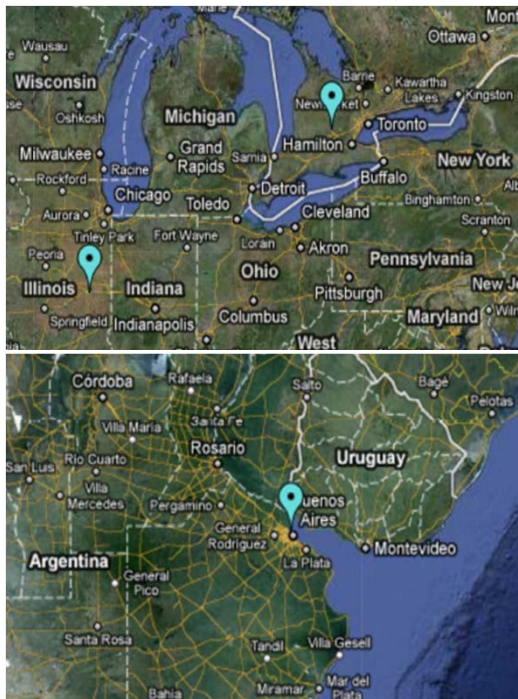


**Status report**



Marie Curie Initial Training Network **PITN-GA-2010-264564** (2011–2014)

10 countries, 30 institutions, 3 industry partners, 150 researchers





# LHCPhenoNet node structure

Network Partners	Institutions involved	Scientist in charge
1 - Spain	CSIC, Universitat de València, Universidad Autónoma de Madrid	Germán Rodrigo
2 - Argentina	Universidad de Buenos Aires	Daniel de Florian
3 - France	CNRS, Université Paris VI, CEA	Matteo Cacciari
4 - Germany	DESY, Humboldt-Universität zu Berlin, KIT Karlsruhe, Universität Wuppertal, MPI München	Sven-Olaf Moch
5 - Hungary	Debreceni Egyetem	Zoltán Trócsányi
6 - Italy	INFN, Università di Firenze, Università di Milano-Bicocca, Università di Pavia, Università Roma Tre, Università di Ferrara	Vittorio Del Duca
7 - Netherlands	FOM	Eric Laenen
8 - Poland	Uniwersytet Slaski	Janusz Gluza
9 - UK	Durham University, Liverpool University, Cambridge University, Oxford University	Adrian Signer ► <b>Daniel Maitre (Feb 2012)</b>
10 - Switzerland	Universität Zürich, ETH	Thomas Gehrmann
11 - RISC	RISC Software GmbH, Universität Linz	Wolfgang Freiseisen
AP1 - CERN	CERN	Michelangelo Mangano
AP2 – Wolfram Research	Wolfram Research, Inc	Roger Germundsson
AP3 – Maplesoft	Maplesoft™	Jürgen Gerhard

## Supervisory Board (SB)

Germán Rodrigo (chair)  
Sven Moch (co-chair)  
Team coordinators  
Industry representatives  
Young Researchers

## Research Board (RB)

WP1: Giulia Zanderighi  
Sven Moch  
WP2: Robert Harlander  
WP3: Günter Dissertori  
WP4: Vittorio del Duca

## Working Groups

WP1-Precision  
WP2-Discovery  
WP3-Experiments  
WP4-Innovations

## Training Board (TB)

Johannes Blümlein  
Thomas Gehrmann  
Gudrun Heinrich  
Peter Paule

## Young researchers

## Team Coordinators

## Recruitment Team (RT)

Matteo Cacciari  
Aude Gehrmann  
G. Rodrigo

## Outreach Board (OB)

Gavin Salam

LHCphenOnet



# LHCphenonet

## Marie Curie Initial Training Networks (ITN)



### Objective

This action aims to **improve early-stage researchers' career prospects** in both the public and private sectors, thereby making research careers more attractive to young people. This will be achieved through a transnational networking mechanism, aimed at structuring the existing **high-quality initial research training** capacity throughout Member States and Associated Countries.

**Early-stage researchers (ESR)** at the time of selection, in **the first four years** (full-time equivalent) of their research careers.

3 months up to 3 years.

**Experienced researchers (ER)** at the time of selection either in possession of a doctoral degree, irrespective of the time taken to acquire it, or at least four years of full-time equivalent research experience. In both cases, **less than 5 years** of full-time equivalent research experience.

3 months up to 2 years.

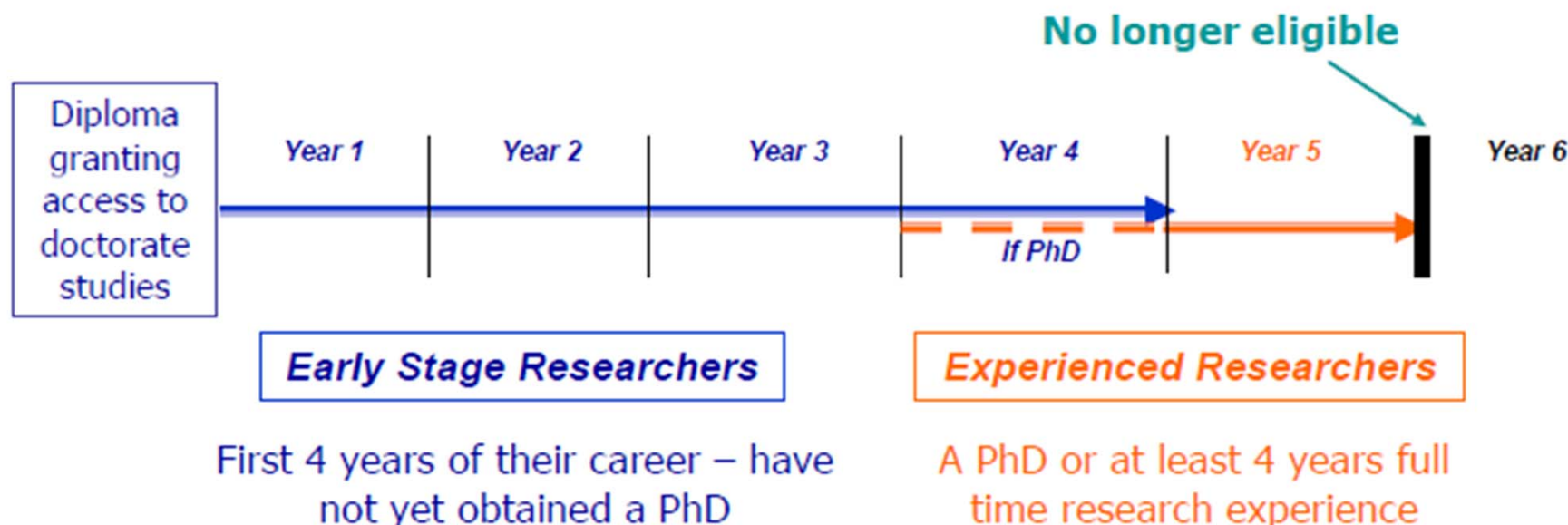
An individual researcher may not be recruited first as an ESR and subsequently as an ER in the same network.

### **Conditions of mobility of researchers**

At the time of selection, have resided or carried out their main activity (work, studies, etc.) in the country of their host organisation for **not more than 12 months in the 3 years** immediately prior to their recruitment.

## 5 Years Experience:

Initial Training Networks are limited to researchers in the first 5 years of their career at the time of recruitment.



Experience is calculated at date of appointment



<http://www.lhcphenonet.eu/jobs>

Thanks to Matteo Cacciari

4 calls for ER/ESR  
positions

## **Call 2 -- ER grants 2010 in LHCPHenoNet**

### **Online Application Procedure**

#### **INSTRUCTIONS**

1. Please fill in the form below and click on the "Submit Online Application" button at the end of the form. Do NOT submit the application form more than once.
2. Shortly after submitting the form you will receive an automated confirmation e-mail containing your application ID number.
3. An email will be sent directly to your referees that you nominate in your online application. This email will contain their username and password and a link which will take them to a secure, confidential web interface. It is important that you inform your referees beforehand about your application to LHCPHenoNet, so that they expect an email from us.
4. The referees can use this web interface to submit their recommendation letter directly into your application file on the LHCPHenoNet server and they will receive a confirmation. This procedure is simple and secure.

All information and documents submitted by you and your referees is stored in a confidential database, which can be accessed only by the LHCPHenoNet Recruitment Board. We appreciate your cooperation with this application procedure.

If you have any difficulty in using this web interface, please send an email to [cacciari AT lpthe.jussieu.fr](mailto:cacciari AT lpthe.jussieu.fr)

# Appointed fellows and visiting scientists in 2011

Partner	Fellow	ER/ESR	Task	Starting Date	Ending Date
Spain	Sebastian Buchta	ESR	M1.1 M4.1	16/01/2011	30/11/2011
Spain	Lucia Hosekova	ESR	M1.2 M1.4	16/11/2011	16/11/2013
Argentina	Roger Hernández Pinto	ESR	M2.4 M3.2	01/06/2011	30/05/2014
France	Emanuele Bagnaschi	ESR	M3.3	04/10/2011	03/10/2014
Germany	Jakob Ablinger	ESR	M4.3	01/09/2011	31/08/2012
Netherlands	Domenico Bonocore	ESR	M1.3 M3.3	01/12/2011	30/11/2014
Poland	Valery Yundin	ESR	M1.4	17/01/2011	16/09/2011
Poland	Radomir Sevillano Borkowski	ESR	M1.4 M2.4	07/11/2011	06/03/2014
United Kingdom	Marek Schoenherr	ESR	M3.4	01/10/2011	30/09/2012
United Kingdom	Xuan Chen	ESR	M3.3 M4.1	01/12/2011	30/11/2012
Switzerland	Riccardo Torre	ESR	M2.4	01/01/2011 01/07/2011	31/03/2011 31/08/2011
Switzerland	Damiano Tommasini	ESR	M3.3 M3.4	01/03/2011	31/08/2011
Austria	Mark Round	ESR	M3.2 M4.3	06/10/2011	06/10/2013
Partner	Visiting Scientist			Starting Date	Ending Date
Italy	Vladimir A. Smirnov			06/10/2011	20/10/2011

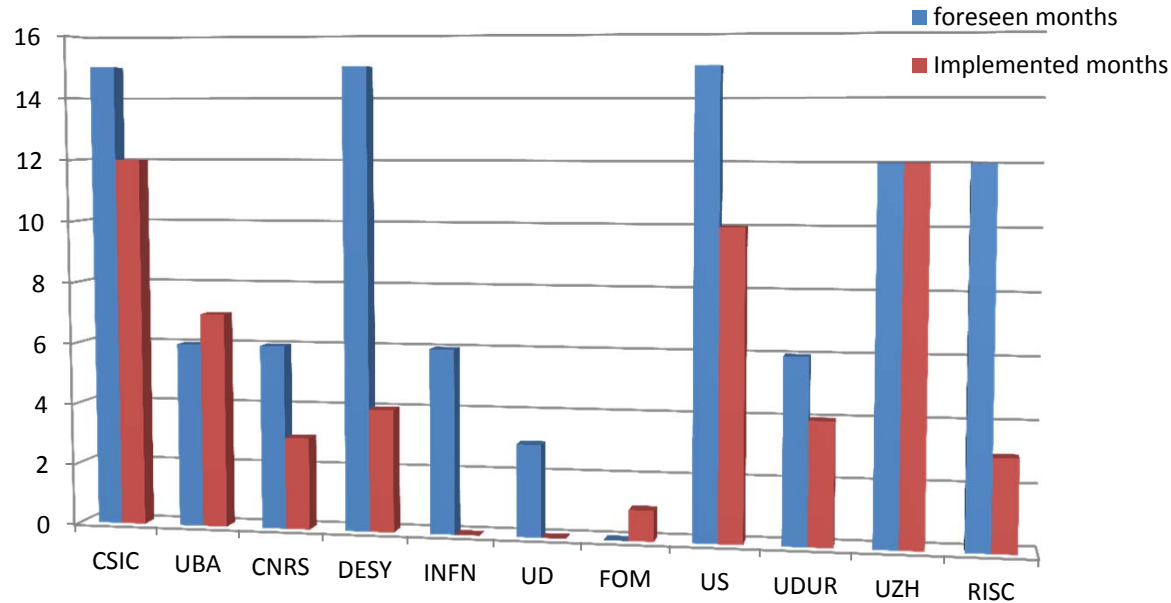
## Expected appointed fellows in 2012

Partner	Fellow	ER/ESR	Task	Starting Date	Ending Date
<b>Spain</b>	Ioannis Malamos	ER	M1.4 M4.1	01/03/2012	28/02/2013
<b>Hungary</b>	Roman Derco	ESR	M1.2 M3.3	01/07/2012	30/06/2014
<b>Hungary</b>	Damiano Tommasini	ESR	M3.3 M3.4	01/04/2012	01/03/2013
<b>Italy</b>	Leandro Cieri	ESR	M1.1	01/02/2012	30/04/2013
<b>Italy</b>	Adam Kardos	ESR	M3.3	01/01/2013	31/03/2014
<b>Netherlands</b>	Kasper Larsen	ER	M4.1	01/10/2012	30/09/2013
<b>Switzerland</b>	Matteo Fael	ESR	M2.3	01/01/2012	31/12/2012
<b>Switzerland</b>	Oliver Dekkers	ESR	M4.1	01/02/2012	31/05/2012
<b>Austria</b>	Alexander Hasselhuhn	ESR	M3.2 M4.3	01/10/2012	30/09/2014

82 applications in the last call

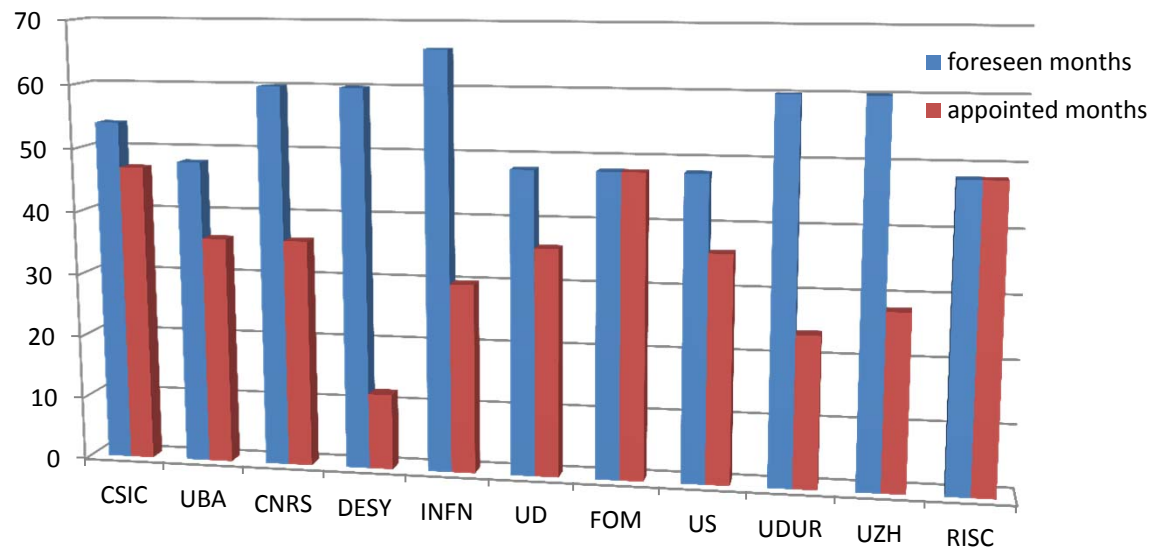


## Implemented versus foreseen ESR+ER person/months during 2011



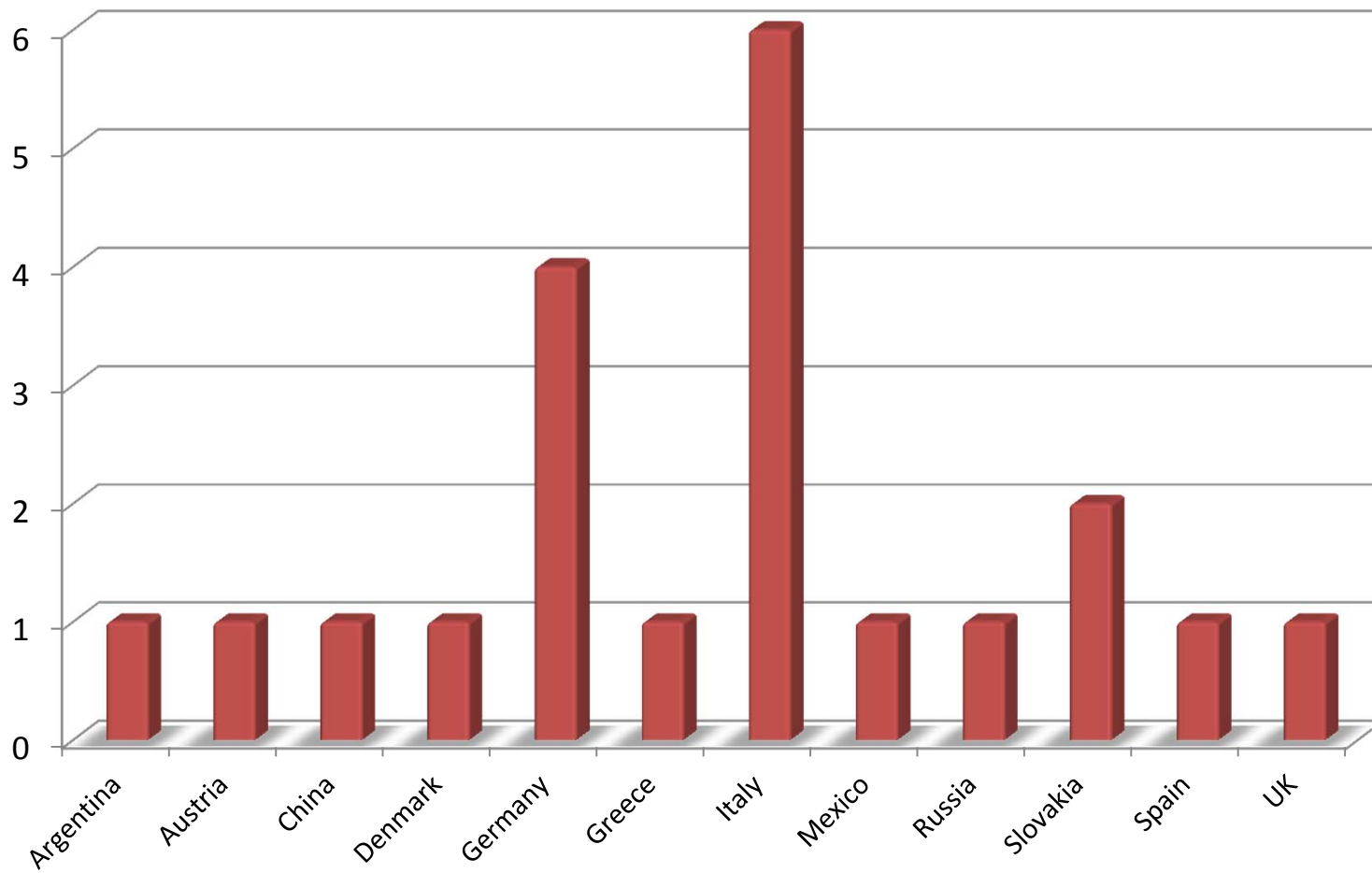
55 person/months  
versus 87

## Appointed versus foreseen ESR+ER person/months 2011-2014



60 % appointed

# ESR/ER nationality



# Questionnaires

<https://webgate.ec.europa.eu/sesam-fp7/questurl.do>

ESR/ER fellows will be asked to submit three types of questionnaires to assess integration into the research & training, career progress, etc.

- Evaluation questionnaire: **at the end of the fellowship**
- Mid-Term assessment questionnaire: **at Mid-Term review stage**
- Follow-up questionnaire: **2 years after fellowship**

The screenshot displays the 'Select questionnaire type' page on the European Commission Research and Innovation portal. The header includes the European Commission logo and navigation links for Technology Platforms, Security Research, FP7 on EUROPA, FP6 - Sixth Framework Programme, CORDIS News, Current Council Presidency, ERAWATCH, and Legal Notice. The breadcrumb trail shows 'FP7 Home > Project Management > Select questionnaire type > ...'. On the left, a sidebar indicates 'You are logged as: No user logged' with a 'Helpdesk' link, and a 'Menu' with links to 'Home', 'Login', and 'Questionnaires'. The main content area, titled 'Select questionnaire type', provides instructions: 'Please select the type of questionnaire you wish to fill-in for your project, following the steps below: 1. In the 'Instrument' selection list, set the instrument of your project. 2. In the 'Project type' selection list, set the type of your project. 3. In the 'Questionnaire type' selection list, select the type of questionnaire you wish to fill-in. 4. Click the button 'Edit Questionnaire' to proceed.' Below these instructions, three dropdown menus are shown: 'Instrument' set to 'MC-Support for training and career development of researchers (Marie Curie)', 'Project type' set to 'MC-ITN-Networks for Initial Training (ITN)', and 'Questionnaire type' set to 'Mid-Term Assessment Questionnaire'. An 'Edit Questionnaire' button is located at the bottom right of the form.



# Network wide Events

Month	Event	Location	Length (days)	Expected number of participants	Expected non-network attendants
2	Kick-off Meeting	Valencia	4	70	10
13	Winter School	Ascona	6	60	20
15	Annual Workshop	Durham	4	60	15
21	Summer School	RISC	6	70	10
22	Annual Workshop and Mid-Term Review Meeting	CERN	6	80	10
33	Summer School	Katowice	6	70	20
36	Annual Workshop	Frascati	5	70	15
44	Summer School	Debrecen	10	70	20
48	Final Meeting	Berlin	5	110	30
throughout	Topical Lectures		2-3	20	5

✓

✓

✓



**Atrani**

# Kick-off meeting of the LHCPheNet Initial Training Network

Valencia, Spain, 1 - 4 February 2011

<http://www.lhcphenonet.eu/valencia2011>

about 70 participants

One session devoted to ESRs presentations:  
Sebastian Buchta, Valery Yundin and Riccardo Torre

Presentations by industry partners:  
Dave Hare (Maple), Oleksander Pavlik (Wolfram) and Roman Stainko (RISC)





[News Articles](#)[Official News](#)[Training](#)[Announcements](#)[Staff Association](#)[Rendez-vous with "InGRID"](#)[Knowledge dissemination: a core mission](#)[LHC Report: A spring clean for the beam pipe](#)[ALICE's wonderland reveals the heaviest antimatter ever observed](#)[New EU project supports LHC theorists](#)[CERN students display their work](#)[Centenary of the discovery of superconductivity](#)[ISOTDAQ - where students learn about trigger and data acquisition](#)[Full metal jacket!](#)[A gift for the Happy Children's Home orphanage](#)[Ombuds' corner: Disputes may be beneficial](#)[News from the Library: Browse Library books directly from your desktop](#)[Lionel METRAL \(1966-2011\)](#)

## New EU project supports LHC theorists

**LHCPhenonet**, a new EU-funded research network aimed at improving the theoretical predictions that guide the LHC experiments, has begun its 4-year run as a Marie Curie Initial Training Network. CERN joins the network as an associate partner, along with almost 30 multinational institutions and computing companies.



Theorists from around the world gathered in Valencia to attend LHCPhenonet's kick-off meeting.

LHCPhenonet will create research opportunities for young, talented European theorists, providing funding for both doctoral and post-doctoral positions across the various participating institutions – including the University of Durham, DESY, and the Istituto Nazionale di Fisica Nucleare (INFN). LHCPhenoNet aims to improve the Quantum Field Theory calculations that set the parameters of the LHC experiments, focusing on the LHC phenomenology that gave it its name. The 4.5 million euro project is funded by the EU's 7th Research Framework Programme and will be coordinated through the Spanish Research Council (CSIC) and



# Outreach



## **The LHC: living with the Uncertainty Principle**

Public talk by **David Kaplan** (Johns Hopkins University)  
at the Kick-off meeting

Video from <http://www.lhcphenonet.eu/outreach>

About 150 attendants



# School of Analytic Computing in Theoretical High-Energy Physics

Atrani, Italy, 6-11 October 2011

<http://www.lhcphenonet.eu/atrani2011>

Simon Caron-Huot

Johannes Henn

Luis F. Alday

Claude Duhr

Henrik Johansson

Volodya Smirnov

*Aspect of scattering amplitudes*

*Wilson loops in  $N=4$  SYM*

*Scattering amplitudes at strong coupling*

*Momentum twistors, special functions and symbols*

*$N=4$  SYM and  $N=8$  supergravity amplitudes*

*Modern methods for multiloop Feynman integrals*

27 PhD students and postdocs, 23 lectures.





# LHCPhenoNet Winter School

Centro Stefano Franscini conference centre at  
Monte Verità, Ascona, Switzerland

22 - 29 January 2012

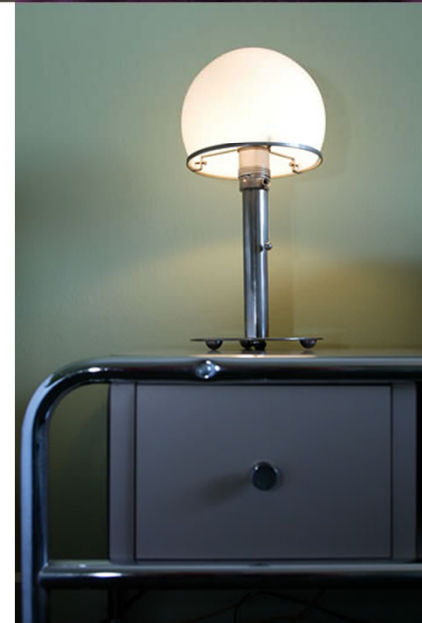
## Lectures

QCD and jet physics,  
Methods for higher order calculations,  
Physics beyond the Standard Model,  
Monte Carlo event generators,  
Parton Distribution Functions,  
Results from the Tevatron,  
Results from the LHC,

by M. Cacciari  
by L. Dixon  
by A. Romanino  
by R. Frederix  
by M. Ubiali  
by T. Junk  
by G. Dissertori

53 students, of them 10 ESR of the network, 30 lectures

<http://www.lhcphenonet.eu/ascona2012>



# LHCPhenoNet Winter School

Centro Stefano Franscini conference centre at  
Monte Verità, Ascona, Switzerland

22 - 29 January 2012

**Students session: 11 presentations**



# Atrani versus Ascona

■ What is your overall evaluation of the School? (1=very negative, 5=very positive)	4.3	4.5
■ Would you recommend the School to a colleague? (1=definitely not, 5 =definitely)	4.2	4.7
■ Did the School give sufficient technical details for your interests? (1=never, 5=always)	4.1	4.1
■ What do you think about the length of the School? (1=far too short, 5=way too long)	2.8	3.2
■ What do you think about the location of the School? (1=horrible, 5=excellent)	4.7	4.1
■ What is your general impression of the lectures? (1=not at all useful, 5=very useful)	4.0	4.3
■ What is your opinion on the amount of lectures? (1=far too few, 5=far too many)	3.0	3.5

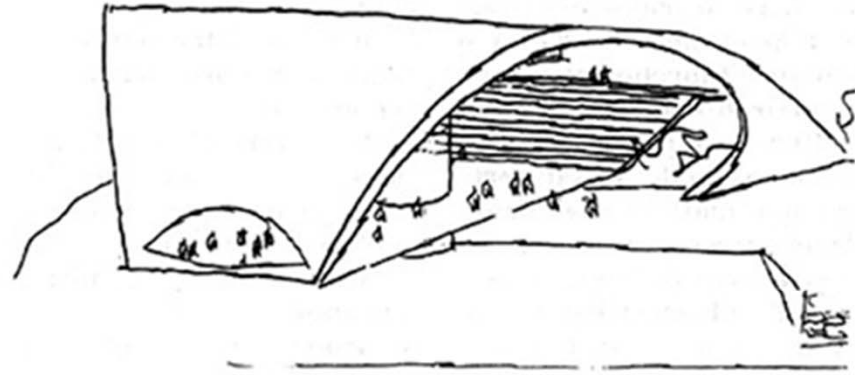


# Mid-Term Review Meeting

Oscar Niemeyer Auditorium

Ravello, Italy

September 2012



## **Mid-Term Review a contractual obligation... and a fruitful dialogue**

The consortium shall organise a Mid-Term Review meeting (art. 7, Special Clause 5 Bis, III.2.1-c) of the Grant Agreement).

The Coordinator shall agree with the Research Executive Agency the date, the venue and the agenda for the meeting at least two months in advance of it. It is recommended to take place between around month 22 of the project. Representatives of each beneficiary\* and all funded fellows must attend the meeting.

The Mid-Term Review report forms the basis for discussion at the meeting (art. III.5) The Coordinator shall submit this **report via SESAM at least one month in advance** Mid-Term Review meeting.

Please note in particular that **at least two weeks before Mid-Term Review meeting** all recruited researchers employed in the frame of the project must complete and submit the online Mid-Term Assessment questionnaire.

Particular attention is paid to the training activities and networking aspects including activities across different sectors. The structure of the network and the Grant Agreement's work programme will also be reviewed. As such, the Mid-Term Review is **not just a scientific evaluation** of the Network nor should it be the first point in the course of the Grant Agreement at which problems are brought to the attention of the Research Executive Agency.

The Mid-Term Review should be understood as a constructive dialogue between the network participants and the Research Executive Agency project officer and is a valuable source of feedback to both the consortium and the Research Executive Agency (REA).

The REA may choose to appoint an **Expert Reviewer** to conduct the Mid-Term Review in place of, or in addition to, the Project Officer. The Expert Reviewer is subject to full confidentiality agreements therefore should be fully included in all discussions.

Additionally, the consortium can choose to invite an external scientific expert, at the expense of the ITN project, to the Mid-Term Review meeting to contribute to the scientific discussions. The REA must be informed in advance of any external persons participating.

## • Suggestion for Agenda of the Mid-Term Review Meeting

It is recommended that the meeting would have duration of 1 full working day.

- 1) **Introduction (10 minutes):** There will be a short introduction by the Research Executive Agency Representative and the Coordinator.
- 2) **Tour de table:** Each scientist-in-charge should briefly present their research team and describe their role within the network.
- 3) **Coordinator's Report (45 minutes):** A presentation by the Coordinator on the Network and the Mid-Term Review Report. The presentation should cover each of the following aspects and sufficient time should be given to the scientific, training and networking topics:
  - a) **Scientific**
    - The scientific, technological or socio-economic reasons for carrying out research in the field covered by the research;
    - the research objectives of the network;
    - scientific highlights of the work so far
  - b) **Training**
    - the training programme (distinguishing between that ESRs and ERs);
    - secondments;
    - complementary skills
    - training events open to external participants
  - c) **Networking**
    - how the Network functions and how the partners cooperate in practice;
    - interaction with private sector
  - d) **Management**
    - Recruitment report
    - Financial aspects
    - any proposed re-orientations of the networks' activities
- 4) **Fellows' individual Reports (10 minutes per fellow):** The Fellows should present themselves, their background, their work, and their training experiences in the Network. This presentation should go beyond the scientific project and should include their expectations on the possible impact of the action on their future career.
- 5) **Meeting between the Fellows and the Research Executive Agency Representative (30 - 60 minutes):** This meeting is intended to allow the Fellows to discuss with the Research Executive Agency Representative about their experiences within the Network.
- 6) **Open discussion:** This discussion will conclude the meeting by summarizing the output of the Network so far and possibly by identifying training areas for future exploitation.

# Secondments to the industry partners

coordinated by Johannes Blümlein

Wolfram  
*Mathematica*





List of milestones				
Milestone number	Milestone name	WP	Teams involved	Linked project result
M1.1	V(VV) + n jets	WP1	1,2,3,4,5,6,7,9,10,11	Perturbative corrections to vector (di-) boson production associated with n=0,...,4 jets
M1.2	Tops + n jets	WP1	1,2,3,4,5,6,7,9,10,11	Perturbative corrections to top-quark production (single-top and pairs) associated with n=0,...,2 jets
M1.3	Resummation	WP1	1,3,4,6,9,10,11	Application of effective field theory methods for resummation of large logarithms
M1.4	On-shell NLO amplitudes	WP1	1,2,3,4,5,6,7,8,9,10,11	Release of on-shell tool-box for NLO massless and massive QCD amplitudes
M2.1	Higgs in VBF	WP2	1,3,4,6,9,10,11	Code for Higgs production in vector-boson fusion improving NLO in QCD
M2.2	Higgs Strahlung	WP2	2,3,4,6,9,11	Experimental signatures and signal rates for Higgs strahlung process
M2.3	BSM particles + n jets	WP2	1,2,3,4,5,6,7,8,9,10,11	Precision predictions for BSM particle production (MSSM, extra dimensions) associated with n=0,...,4 jets
M2.4	BSM decays	WP2	1,3,4,6,7,9,10,11	Computation of relevant decay channels in BSM models (MSSM and extra dimensions)
M3.1	Jetography	WP3	1,3,5,6,9,10,11	Infrared safe and efficient jet algorithms made for use in experimental analyses
M3.2	PDFs from LHC	WP3	2,3,4,6,9,10,11	Publication of new global fits of PDFs with early LHC data (interface to LHAPDF)
M3.3	Parton level Monte Carlos	WP3	1,2,3,4,5,6,7,9,10,11	Release of code for experimental use hard parton cross sections of WP1
M3.4	Resummation vs. exact higher orders	WP3	1,2,3,4,6,7,8,9,10,11	Combination schemes for fixed-order predictions and resummation to increasing logarithmic accuracy
M4.1	Multi-loop on-shell recursions	WP4	1,2,3,4,5,6,7,8,9,10,11	Publication of algorithms for on-shell recursions at multiple loops
M4.2	Equation solver	WP4	3,4,6,7,9,10,12	Publication of computer algebra packages for solving large systems of equations
M4.3	Computer algebra 2.0	WP4	3,4,6,7,8,9,10,11,12; AP1, AP2	Development and testing of algorithms for next generation of symbolic manipulation programs; cooperation with Maplesoft™ and Wolfram research
M4.4	Open FORM	WP4	4,7	Open source release of symbolic manipulation program FORM

# <http://www.lhcphenonet.eu/publications>

Thanks to Tobias Kasprzik and Matthias Steinhauser



## Institute for Theoretical Particle Physics (TTP)

### LHCPhenoNet Preprints 2012

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2011    [Recent](#)

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[All about LHCPhenoNet preprints](#)

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- **LPN12-040**  
NLO QCD corrections to the production of  $W^+W^-$  plus two jets at hadron colliders  
by N. Greiner, G. Heinrich, P. Mastrolia, G. Ossola, T. Reiter, F. Tramontano  
also available as [arxiv: 1202.6004](#)
- **LPN12-039**  
PDF fit in the fixed-flavour-number scheme  
by S. Alekhin, J. Bluemlein, S. Moch  
also available as [arxiv: 1202.4642](#)
- **LPN12-038**  
Evaluation of Multi-Sums for Large Scale Problems  
by J. Blumlein, A. Hasselhuhn, C. Schneider  
also available as [arxiv: 1202.4303](#)
- **LPN12-037**  
Generalized threshold resummation for semi-inclusive  $e^+e^-$  annihilation  
by N.A. Lo Presti, A.A. Almasy, A. Vogt  
also available as [arxiv: 1202.5224](#)

*Preprint information is made public  
only after giving the arXiv number*

List of publications by research milestone. Publications are identified by their LHCPheNet preprint number.

Publications co-authored by ESRs of the network are given in red.

Milestone	LPN11-XX	LPN12-XXX
M1.1 V(VV) + n jets	11, 14, 20, 22, 37, 38, 74, 85, 92	24, 25
M1.2 Top quarks + n jets	9, 39, 52, 70, 78, 80, 81, 91	3, 4, 12, 16, 28
M1.3 Resummation	5, 8, 13, 27, 30, 36, 41, 44, 46, 49, 50, 55, 64, 67, <b>73</b> , 76, 82, 95	2, 27, 29
M1.4 On-shell NLO Amplitudes	3, <b>6</b> , 7, 18, 21, 23, 26, 28, 65, <b>72</b> , 75, 87, 89, 99	
M2.1 Higgs in VBF	32, 40, 51	<b>7</b>
M2.2 Higgs Strahlung	1, 61, 77, 86, 88	1, <b>7</b>
M2.3 BSM particles + n jets	<b>10</b> , 15, 17, 45, 47, 48, 56, 57, 60, 68, 79, 96	13, <b>10</b> , <b>34</b>
M2.4 BSM decays	<b>12</b> , 71	<b>11</b>
M3.1 Jetography		15,17, 22
M3.2 PDFs from LHC	2, 16, 19, 29, 31, 34, <b>35</b>	5
M3.3 Parton level Monte Carlos	42, 63, 69, 83, 84, 90, <b>93</b>	6, 9, 30
M3.4 Resummation vs. exact higher Orders	4, 43, <b>58</b>	18, <b>26</b>
M4.1 Multi-loop on-shell recursions	25, 66, 94, 98	19, 20, 21, <b>35</b>
M4.2 Equation solver	97	15 publications co-authored by ESRs
M4.3 Computer algebra 2.0	<b>24</b> , 33, 53, 100	
M4.4 Open FORM		

**Multipartner publications during 2011. Papers are identified by their LHCPhenoNet preprint number LPN11-XX**

[illegible]



## Computer codes and project web sites.

Computer code	Language	Available from project page	ESR/ER involved
PJFry 1.0.0	Fortran	<a href="https://github.com/Vayu/PJFry/">https://github.com/Vayu/PJFry/</a>	Valery Yundin
GoSam 1.0	Python	<a href="http://projects.hepforge.org/gosam/">http://projects.hepforge.org/gosam/</a>	Valery Yundin
FeynRules 1.6.0	Mathematica	<a href="http://feynrules.irmp.ucl.ac.be/">http://feynrules.irmp.ucl.ac.be/</a>	
POWHEG BOX 1.0	Fortran	<a href="http://powhegbox.mib.infn.it/">http://powhegbox.mib.infn.it/</a>	Emanuele Bagnaschi
CHAPLIN	Fortran	In preparation	
VBFNLO 2.5.3	Fortran, C++	<a href="http://www-itp.particle.uni-karlsruhe.de/~vbfnlweb/">http://www-itp.particle.uni-karlsruhe.de/~vbfnlweb/</a>	
aMC@NLO	Fortran, Python	<a href="http://amcatnlo.web.cern.ch/">http://amcatnlo.web.cern.ch/</a>	
HELAC-NLO	Fortran	<a href="http://helac-phegas.web.cern.ch/">http://helac-phegas.web.cern.ch/</a>	
MadGraph / MadEvent	Python, C++	<a href="http://madgraph.hep.uiuc.edu/">http://madgraph.hep.uiuc.edu/</a>	
BlackHat	C++	In preparation	
Rocket	Fortran	In preparation	
HqT 2.0	Fortran	<a href="http://theory.fi.infn.it/grazzini/">http://theory.fi.infn.it/grazzini/</a>	Damiano Tommasini
HNNLO 1.0	Fortran	<a href="http://theory.fi.infn.it/grazzini/">http://theory.fi.infn.it/grazzini/</a>	
DYNNLO	Fortran	<a href="http://theory.fi.infn.it/grazzini/">http://theory.fi.infn.it/grazzini/</a>	
CARLOMAT	Fortran	<a href="http://kk.us.edu.pl/carlomat.html">http://kk.us.edu.pl/carlomat.html</a>	
PowHel	Fortran	In preparation	
FastJet 3.0	C++	<a href="http://fastjet.fr/">http://fastjet.fr/</a>	
Sigma	Mathematica	<a href="http://www.risc.jku.at/research/combinat/software/Sigma/">http://www.risc.jku.at/research/combinat/software/Sigma/</a>	
HarmonicSums	Mathematica	In preparation	Jakob Ablinger
EvaluateMultiSums	Mathematica	In preparation	
MultiIntegrate	Mathematica	In preparation	Jakob Ablinger
Sherpa	C++	<a href="http://www.sherpa-mc.de/">http://www.sherpa-mc.de/</a>	Marek Schoenherr

## List of Deliverables

Del. No	Deliverable Title	Expected delivery date	Delivery date	Comments
1	LHCPhenoNet logo and website	-2	-6	
2	1st Annual Report	12	14	1 <sup>st</sup> version delivered on month 13
6	ESR positions filled	42	14	357 person/months appointed out of 492
7	ER positions filled	36	14	24 person/months appointed out of 108
8	Scientific Publications	throughout	12	126 publications in 2011, 15 co-authored by the fellows
9	Open source codes	throughout	12	



Please, add acknowledgements to  
the network Contract

**PITN-GA-2010-264564**

LHCphenOnet

And use the logo in the next Mid-term meeting

# Summary talk by Alain Blondel at Moriond EW 2012

Both ATLAS and CMS exclude a SM scalar boson up to  $\sim 550$  GeV  
except in range (117-128 GeV): excess  $2.5\text{-}2.9\sigma$   
at 125-126 GeV/c<sup>2</sup> (consistent)

ATLAS :  $\gamma\gamma$  and  $ZZ$

CMS :  $\gamma\gamma$

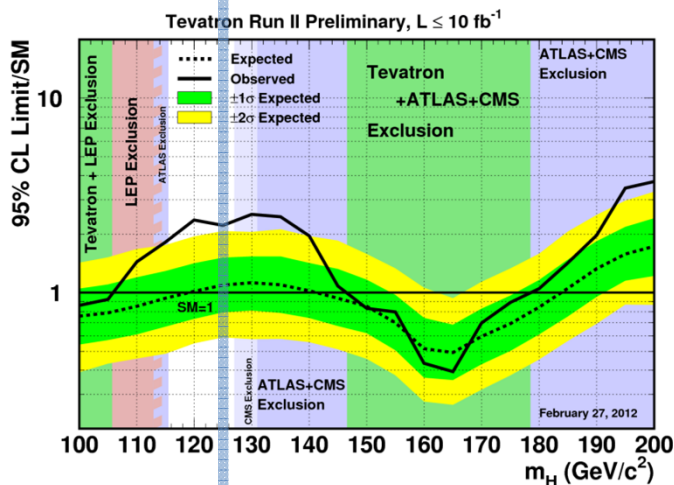
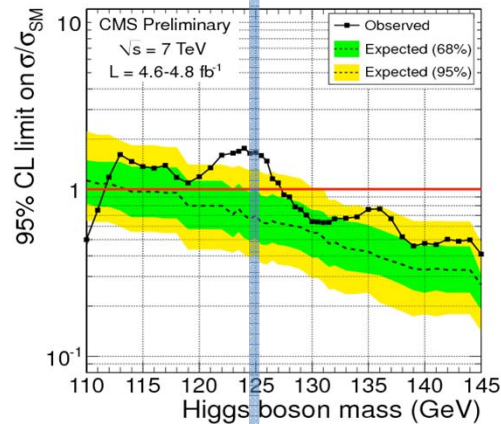
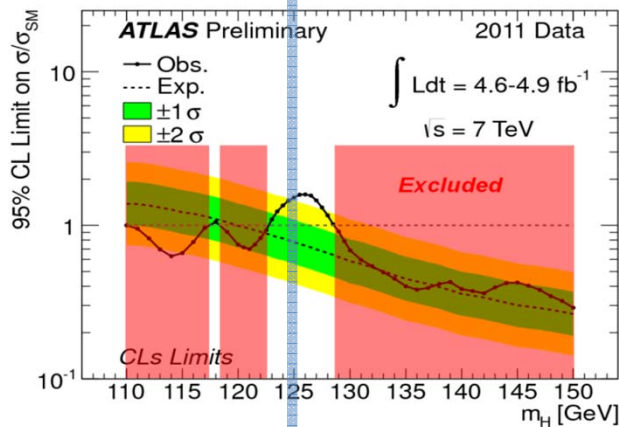
CDF + D0 mostly  $b\bar{b}$  &  $WW$

Too soon to claim even evidence, but...

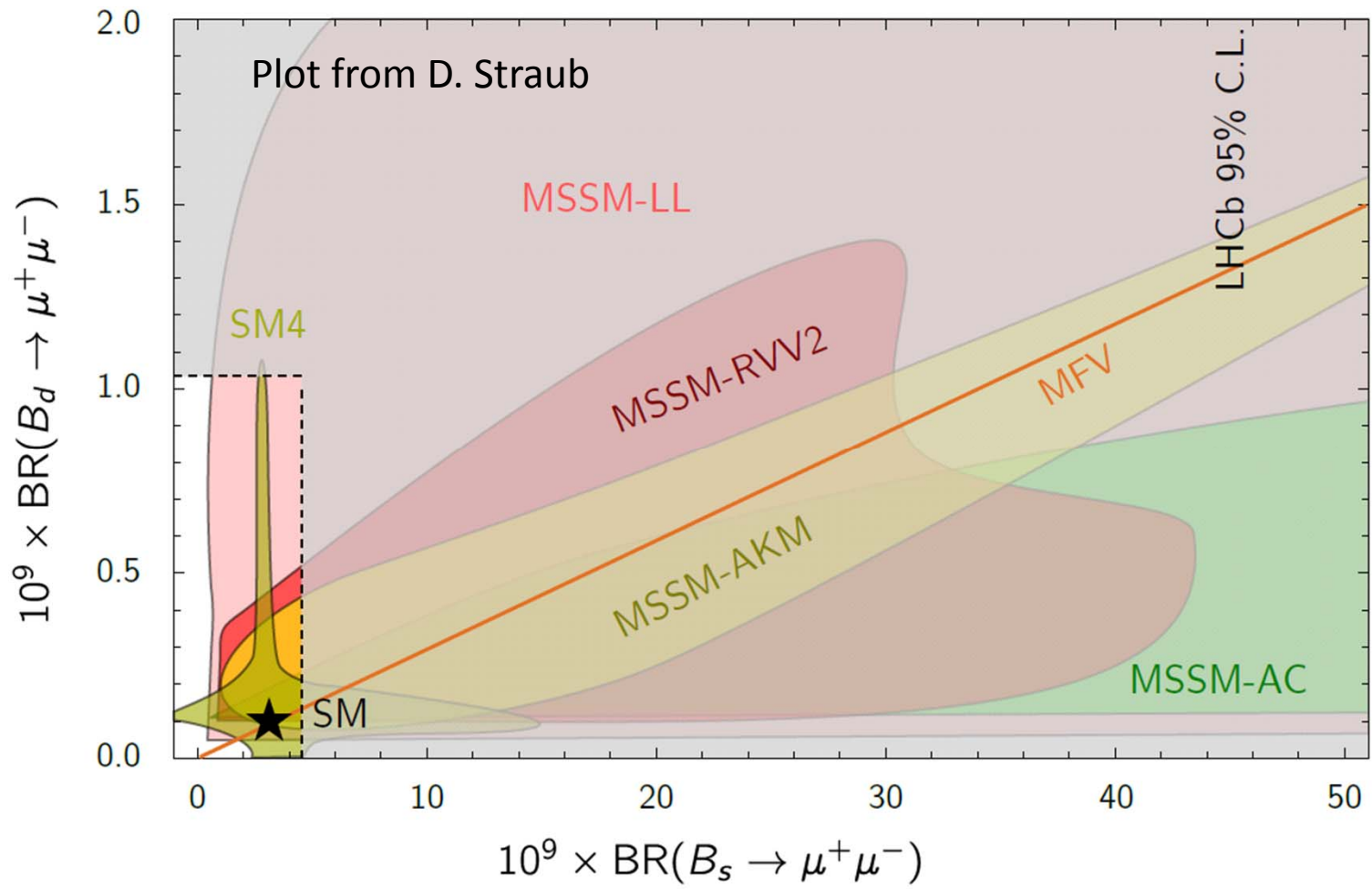
'Who would bet against  
Higgs boson (scalar boson) @125 GeV?'

My guess: Look Elsewhere + Look There  
→ CL probably  $> \sim$  local significance of 2d  
experiment

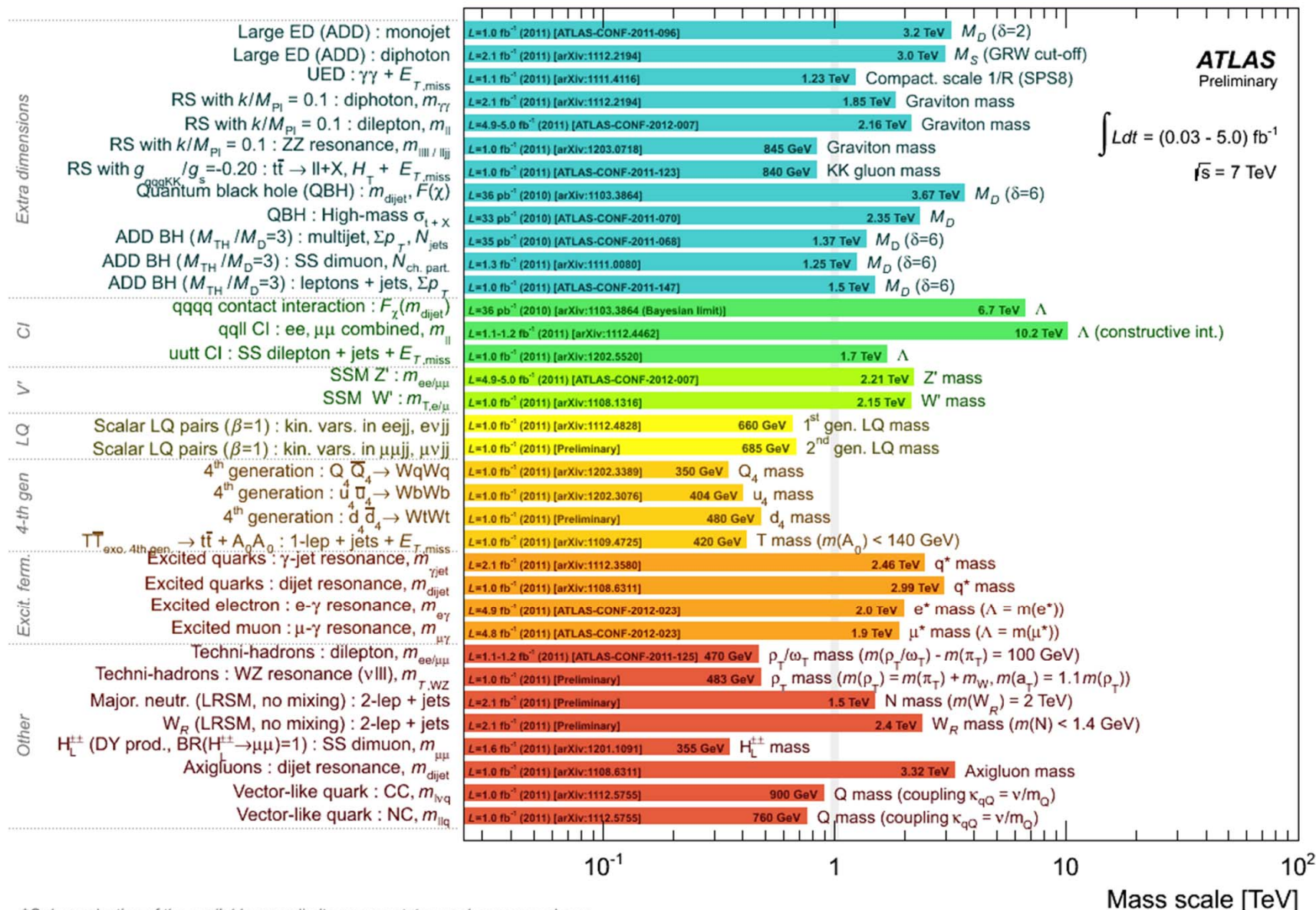
**More data in 2012 →  $5\sigma$  and more channels!**







# ATLAS Exotics Searches\* - 95% CL Lower Limits (Status: Moriond EW 2012)



\*Only a selection of the available mass limits on new states or phenomena shown