



IML LHC Machine Learning WG and Data Science WS at LHC

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**PH-SFT Group Meeting
Nov. 2, 2015**

Outline



- Inter-experimental LHC Machine Learning Working Group
- Data Science at the LHC Workshop

- **IML:**
new **I**nter-experimental LHC **M**achine-**L**earning working group formed
- It's goals are:
 - **Exchange of HEP-ML expertise** and experience among LHC experiments
 - **ML Forum for LHC-related** development and discussions
 - **ML software development and maintenance**
 - **Current and future ML R&D in HEP**
 - **Exchange between HEP and ML communities**
 - **Education** (Tutorials)

- **Website:** <http://iml.cern.ch>
- **Latest meeting** Oct. 28
<https://indico.cern.ch/event/453344/>
- **Currently 100+ participants** (with minimal advertisement, pretty much word of mouth) from all LHC experiments plus other CERN groups
 - Please join if you are interested
 - <http://hepsoftwarefoundation.org/content/machine-learning-forum>
- **Coordinators:** me and Steven Schramm (U. of Geneva)

9 - 13 November 2015, CERN

DS@LHC

Local Organising Committee

- Xavier Cid (CERN)
- Gilles Louppe (CERN)
- Michelangelo Mangano (CERN)
- Maurizio Pierini (CERN)
- Jean-Roch Vlimant (Caltech)

Program Committee

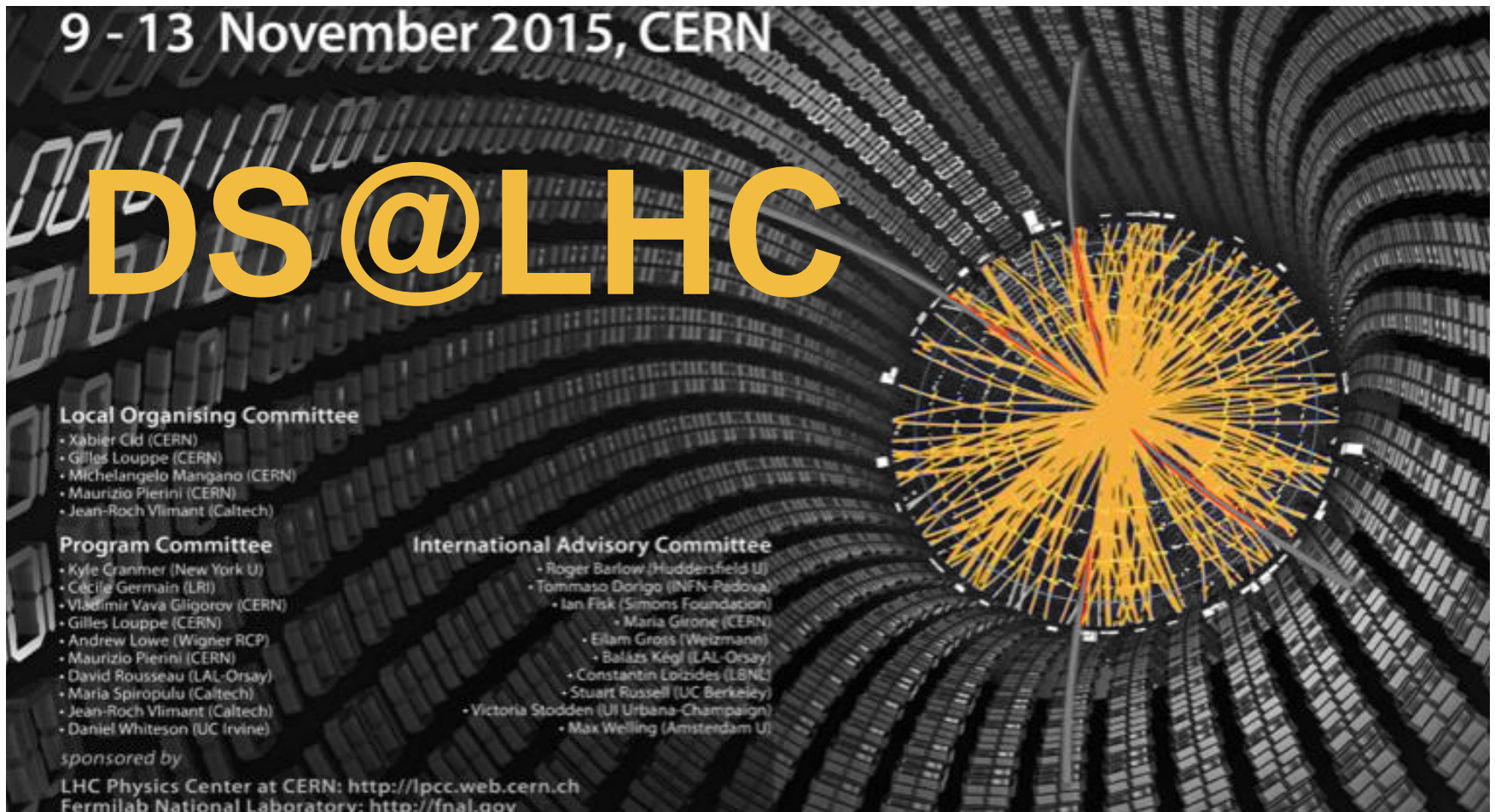
- Kyle Cranmer (New York U)
- Cécile Germain (LRI)
- Vladimir Vava (Glgorov (CERN)
- Gilles Louppe (CERN)
- Andrew Lowe (Wigner RCP)
- Maurizio Pierini (CERN)
- David Rousseau (LAL-Orsay)
- Maria Spiropulu (Caltech)
- Jean-Roch Vlimant (Caltech)
- Daniel Whiteson (UC Irvine)

International Advisory Committee

- Roger Barlow (Huddersfield U)
- Tommaso Dorigo (INFN-Padova)
- Ian Fisk (Simons Foundation)
- Maria Girone (CERN)
- Eilam Gross (Weizmann)
- Balázs Kégl (LAL-Orsay)
- Constantin Loizides (LBNL)
- Stuart Russell (UC Berkeley)
- Victoria Stodden (UI Urbana-Champaign)
- Max Welling (Amsterdam U)

sponsored by

LHC Physics Center at CERN: <http://lpsc.web.cern.ch>
Fermilab National Laboratory: <http://fnal.gov>





- Similar to **PhyStat** but with focus on **ML**
- Bridge between **ML** and **HEP**
- Next one already planned for 2016

Data Science'15



	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
TALKS	General Intro DS in HEP ATLAS CMS	ABC / matrix elements / approximate likelihood...	Alice / Deep Learning	LHCb / Real Time data analysis	Special round table on LHC & Open Data
TUTORIALS	TMVA	matrix element methods	Deep Learning	SciKit	cuDDN by nVidia



- Our contribution to DS'15:
 - **Monday**: Variable selection talk + IML Sergei
 - **Monday**: New TMVA features:
 - Data-Loader/Var. Selection Sergei, Lorenzo, Omar
 - <http://hub.oproject.org> (Root/DMAaS) sample notebook
TMVA tutorial
 - **Thursday**: New TMVA features:
 - R/Python interfaces Sergei, Lorenzo, Omar



DS'15 Special Guests



- Ellie Dobson (industry, previously ATLAS)
- Gregory Dobler (CUSP)
- Demis Hassabis (Deep Mind)
- Christian Mueller (Simons Foundation)

Summary



- New **I**nter-experimental LHC **M**achine **L**earning Working Group (**IML**) formed
- **Data Science at LHC** 2015 workshop at CERN in November.
- Please participate if you would like to learn more about Machine Learning methods, tools and applications in HEP