



LHC Physics Center

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LHC Physics Center (LPC) co-coordinator

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- **Outline**

- ◆ **LHC Physics Center**

- **General Introduction**
- **Center Facilities and Activities**
 - **Support Groups**
 - **All US CMS Meetings**
- **New Initiatives**
 - **CERN travel for coordinators**
 - **Mentor program, J-Term, Workshops**
- **Participation in CMS physics**
 - **Leveraging lab resources**
 - **Promotion record**
- **Future Directions of Center**



LHC Physics Center

- **Fermilab serves as the host lab for the US CMS collaboration**
 - ◆ **What are the functions of a host lab for remote collaboration?**
 - **Tailors to the research needs of the US community, leveraging the extensive resources of a national laboratory**
 - **US CMS physics community (48 institutions, ~440 PhD physicists and ~200 grad students) has a big footprint**

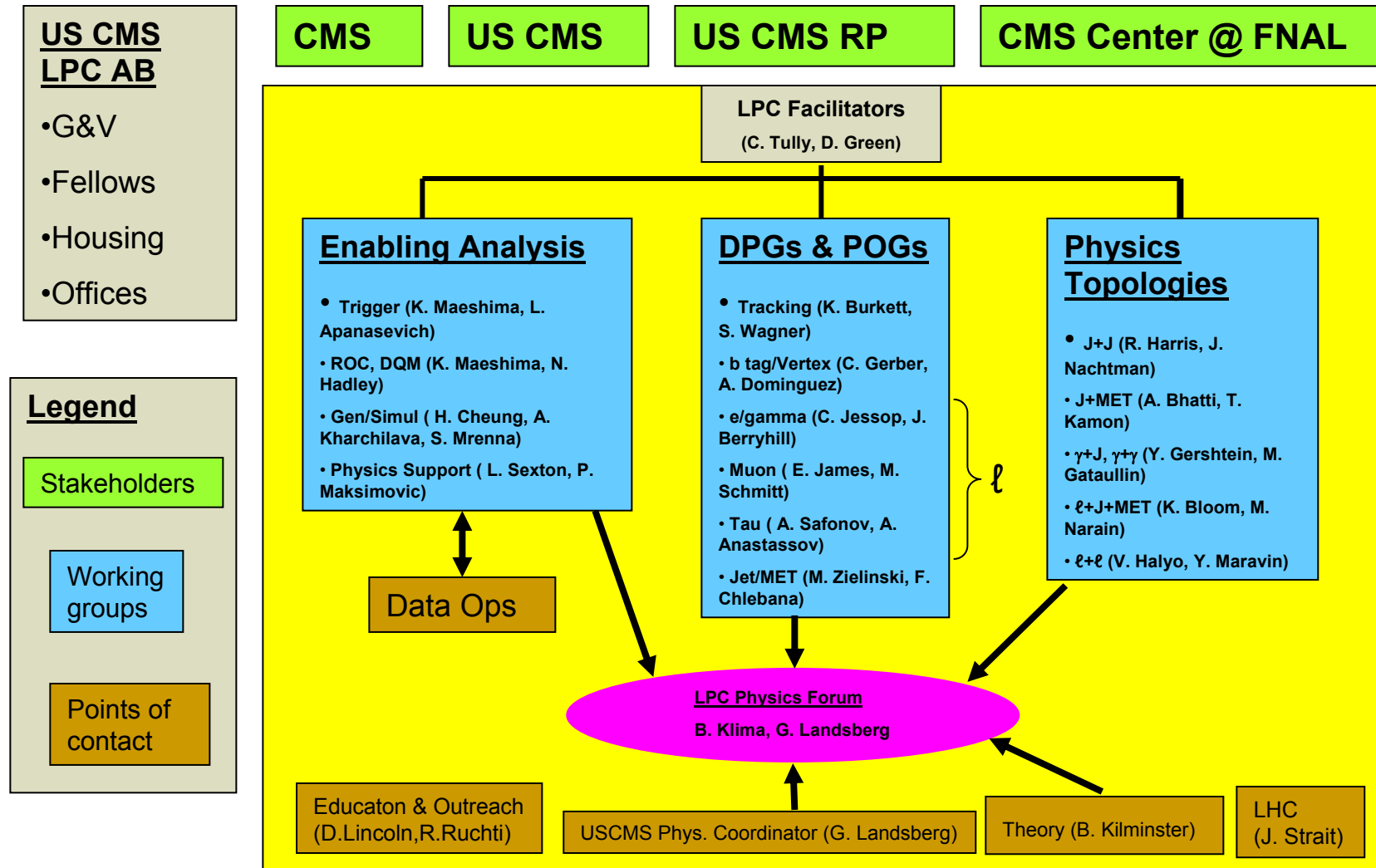
Only ~25-33% of this community is able to be CERN resident for extended periods. FNAL has the capacity to host a large fraction of the remaining community and especially that component that travels frequently for short-term visits (2-3 days)

Fermilab hosts a core physics community composed of staff, RAs, Wilson fellows and visiting physicists and offers a wealth of resources including ROC shift facilities, video meeting rooms, offices and on-site housing
 - **Unsurpassed computing and physics support group**
 - **Constant availability of topological and physics object working group representatives, detector and data monitoring experts**

It's the guaranteed overlap with key people that makes short-term visits worthwhile
 - **Effective launching ground for future CMS coordination positions and CERN-central responsibilities**
- **Forging new ground in an era of international science participation**
 - **Learning how to provide what US physicists need to be effective in remote participation and to leverage the US investment in remote computing and university and lab-based expertise**



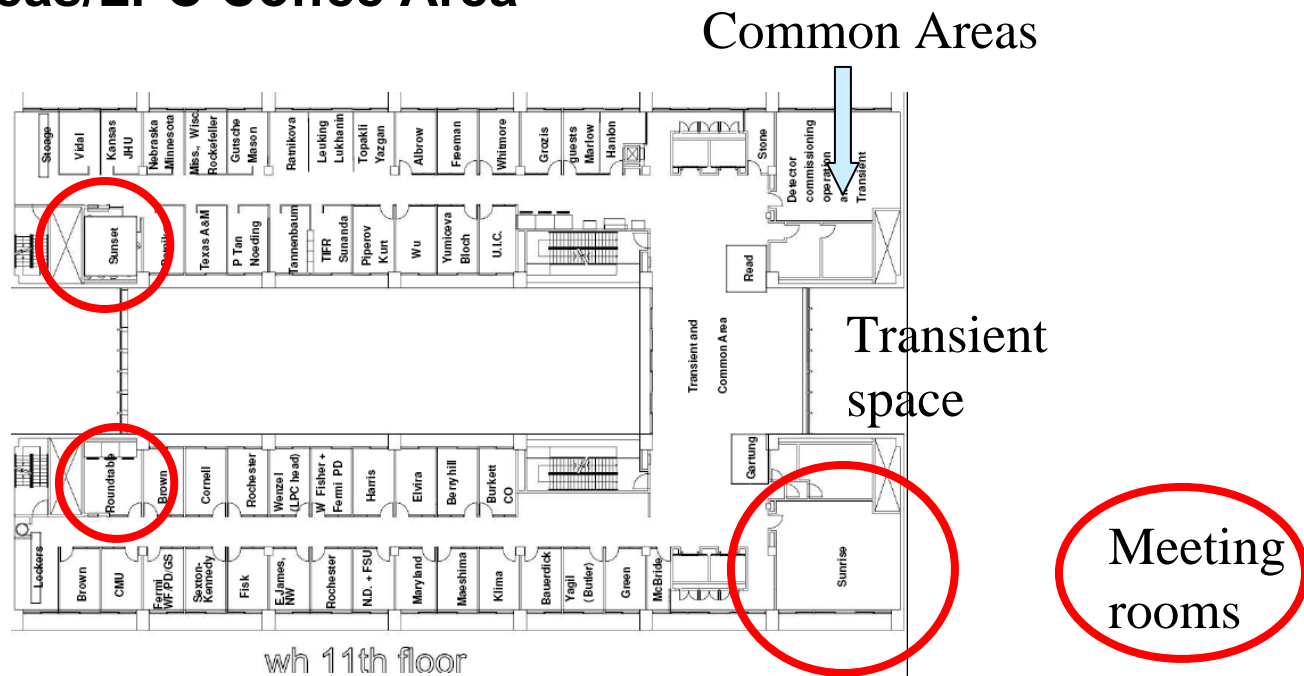
LPC Organization Chart





Physical Footprint

- Entire 11th Floor of High Rise
- Part of 10th Floor – to be expanded
- Offices/Desks for all US CMS groups with resident people (approx. 30 groups)
- Video Conf. Meeting Rooms (all well equipped)
- Common Areas/LPC Coffee Area





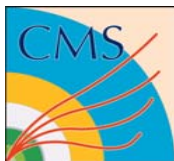
CERN presence

- **All US CMS Meetings**
 - ◆ **One year ago, 20 min. report on the status of detector and accelerator was added to the weekly meeting content**
 - **Slawek Tkaczyk and Jeff Spalding organize the reports**
 - **Experts, such as Jim Strait come for accelerator discussions**
 - **Provides a concise and revealing update for the whole community**
 - **Great highlight of the meeting!**
 - ◆ **Once this was a Fermilab-centric meeting, now the CERN-based participation is greater**
 - **Improved meeting time and place for CERN participation**
 - **Enhanced with local US CMS organizers**
 - **Snacks and Drinks**
 - **Serves as a weekly gathering place of US CMS people at CERN**
 - ◆ **Often covers hot topics in Global Run Analysis or future developments impacting physics analysis**
 - **Oct. 31st talk on Physics Analysis Tools by Petar Maksimovic was excellent**



LHC Physics Center

- **Post-Puerto-Rico Center Improvements**
 - ◆ **Travel Voucher Program**
 - 22 LPC University Coordinators given \$5K travel funds to increase their CERN presence and participation in CMS physics efforts – has already made a noticeable impact on the level of connection between LPC working groups and the principal CERN-based analysis efforts
 - ◆ **Mentor Program**
 - Web Facebook of two dozen Senior US Physicists that have agreed to field questions and problems related to CMS physics analysis
 - ◆ **J-Terms and Workshops**
 - One week long CMS-specific tutorials, lectures and advanced topics
 - Diversity in Workshop Topics - Upgrades Workshop (Nov. 19-21, 2008)
- **Center Perception**
 - ◆ CERN: strong, effective wing of the CMS physics effort
 - ◆ US groups: collab. resource for multi-institution physics analysis efforts
 - ◆ US community: as the place to go (and EVO) to stay in touch with the latest developments in detector/accelerator operation and fresh analyses



LPC University Coordinators

Area	Coordinator	University
Trigger	L. Apanasevich	UIC
ROC,DQM	N. Hadley	UMD
Gen/Simul	A. Kharchilava	Buffalo
Physics Support	P. Maksimovic	JHU
Physics Forum	G. Landsberg	Brown
Tracking	S. Wagner	Colorado
b-tag/Vertex	C. Gerber	UIC
b-tag/Vertex	A. Dominguez	Nebraska
e/gamma	C. Jessop	Notre Dame
Muon	M. Schmitt	Northwestern
Tau	A. Safonov	Texas A&M
Tau	A. Anastassov	Northwestern
Jet/MET	M. Zielinski	Rochester
Dijets	J. Nachtman	Iowa
J+MET	A. Bhatti	Rockefeller
J+MET	T. Kamon	Texas A&M
Photons	Y. Gershtein	Rutgers
Photons	M. Gataullin	Caltech
Lept+Jet+MET	K. Bloom	Nebraska
Lept+Jet+MET	M. Narain	Brown
Dileptons	V. Halyo	Princeton
Dileptons	Y. Maravin	KSU

[Many Already Reaping the Benefits of the Travel Voucher Program to CERN](#)



Mentors Program Web Site

The screenshot shows a web browser window with the URL <http://www.uscmsmentors.org/>. The page features a navigation bar with the text "US CMS Mentors" and the USCMS logo (THE COMPACT MUON SOLENOID). On the left, there is a "Log in" section with input fields for "Username" and "Password", a "Log in" button, a "Remember me" checkbox, and links for "Register" and "Lost password". On the right, there is a "Latest activity" section with a list of physics topics, each accompanied by a small image: Trigger / DAO, New Physics, Taus, Jets / MET, Electrons / Photons, B-Tagging, Silicon Tracker, Muon Detector, HCAL, and QCD. A blue box with the text "www.uscmsmentors.org" is overlaid on the right side of the page, and another blue box with the text "Register! And get connected to the top US physicists (who might one day hire you)" is overlaid on the bottom right of the page.

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CMS Physics and the LPC



Mentors Site Already Up and Running

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On-Site Experts

- **Expert Coverage in Physics Object Reconstruction Software**
 - ◆ **Muons**
 - ◆ **Tracking**
 - ◆ **Calorimeters**
- **Top-notch Simulation Group**
 - ◆ **Leaders of Recent Calorimeter Task Force**
 - ◆ **Top Expert in Generators**
- **Leading Role in Data Quality Monitoring and High Level Trigger Monitoring**
 - ◆ **Operation of ROC facility**



Physics Support Group

- **Physics Support Group is one of the greatest assets of the LPC**
 - ◆ **Organized by Liz Sexton-Kennedy and Petar Maksimovic (JHU)**
 - ◆ **Keeps US on top of leading developments that impact and define how physics analysis is done on CMS**
 - ◆ **Core developers form the expert base that continues to command respect from the CMS community**



Computing Resources

- **CMS Center Computing Facilities**
 - ◆ **Unprecedented computing resources**
 - **LPC hit the batch limit in August and by mid-September, a planned upgrade tripled the batch resources – in general, the computing group is one step ahead of potential bottlenecks**
 - **Every US CMS collaborator can request 1TB of personal analysis space on the LPC cluster (just send request e-mail to Dan and Chris)**
 - ◆ **Heartbeat of the physics effort of US CMS**
 - **powerful computing resources is an inseparable part of LHC research**
 - ◆ **University-based computing efforts (Tier-3) depend heavily on the FNAL-based experts (recent Tier-3 workshop hosted at Fermilab)**



Record of US CMS Physics Appointments

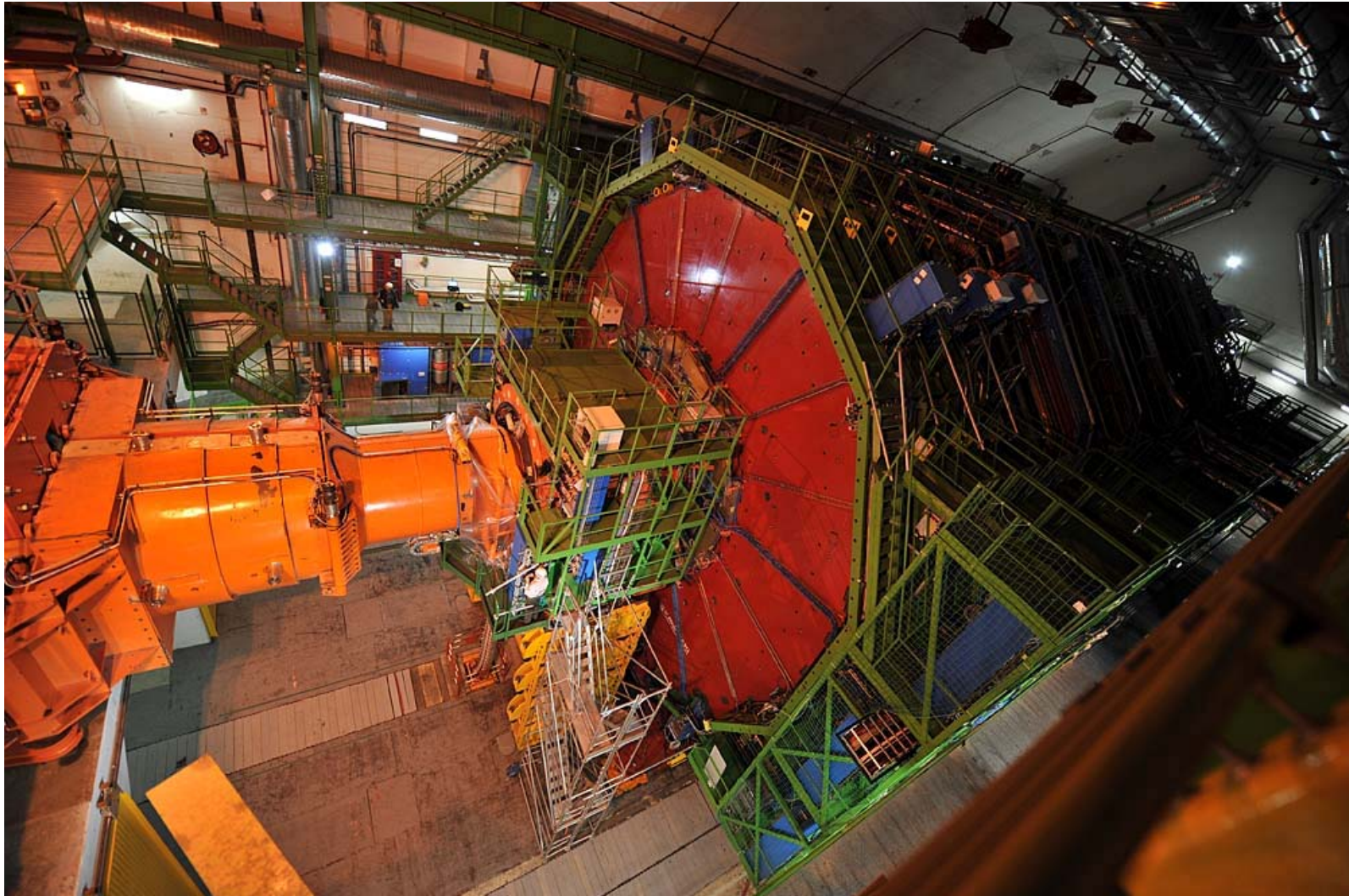
New Physics Coordinator Appointments for 2009-2010

- **egamma** Paolo Meridiani
- **muons** Riccardo Bellan
- **btag** Wolfgang Adam
- **jetmet** Peter Schleper (joining [Daniel Elvira](#))
- **p-flow/tauid** Colin Bernet and Simone Gennai
- **QCD** [Vivian O'Dell](#)
- **EWK** no change (keeping [Sridhara Dasu](#))
- **TOP** Tim Christiansen (joining [Claudio Campagnari](#))
- **Forward** Krzysztof Piotrkowski
- **Bphysics** Paula Eerola (joining [Jim Olsen](#))
- **Heavy Ions** [Gunther Roland](#)
- **Higgs** [Andrey Korytov](#)
- **SUSY** [Jeff Richman](#)
- **Exotica** [Greg Landsberg](#)
- **Generators** Fabien Stoeckli

- **New Physics Object Group on Tracking**
[Boris Mangano](#) and [Kevin Burkett](#)



This is your detector – learn as much as you can about it



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CMS Physics and the LPC



Summary and Future Directions

- **LHC Physics Center is actively serving the US CMS community**
 - ◆ A number of improvements have been implemented, including a mentor program, a more in-depth J-Term and a wider range of workshop topics to broaden participation
 - ◆ Created a stronger CERN presence through a travel voucher program and better All US Meeting CERN-based arrangements
 - ◆ Physics coordination promotion record looks good and there is a general perception that the LPC is a good launching ground into the physics program
- **The Future is Yours**
 - ◆ We believe the Mentor program will bring about a new level of interaction between US CMS groups to bring isolated university efforts up to speed and to facilitate collaboration
 - ◆ The LPC can be used in any manner that best serves the US CMS physics effort
 - **Special-Topic Workshops, New Concepts for providing support for remote collaboration**
 - **New Ideas are welcome and have a record of being implemented**