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# Increasing diversity in science

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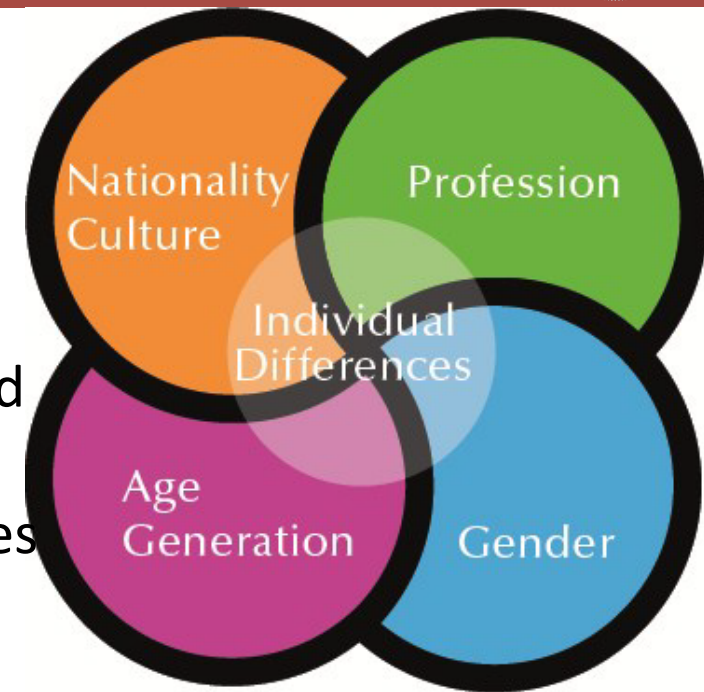
August 7<sup>th</sup>, 2016

# Diversity in science



Diversity in science goes further than a concern for equity and social justice

The diversity of life practices, perspectives, values, and motivations involve choices about what problems to study, what populations to study, and what procedures and measures should be used.



<http://diversity.web.cern.ch>

For example, Scott Page (2007) has documented how the presence of diverse perspectives (including gender and ethnic diversity) in collective problem-solving in business and other organizations leads to more innovative solutions.

*Douglas L. Medin and Carol D. Lee, Diversity Makes Better Science, 2012, Observer*

*Chris Tachibana, Diversity: Promoting New Perspectives, 2014, Science*

# Big Collaborations



- The European Organization for Nuclear Research (CERN) is a European research organization that operates the largest particle physics laboratory in the world.
- The collaboration is a good example of people from different backgrounds working together.
- Since 1954 CERN members have done significant discoveries and innovations, from the World Wide Web to the discovery of the Higgs.
- **Could scientists achieve more when they collaborate across borders?**

22	Member states
4	Observer countries
60	Non-member
<b>86</b>	<b>Total</b>

<http://international-relations.web.cern.ch/International-Relations/office/listcountries.html>

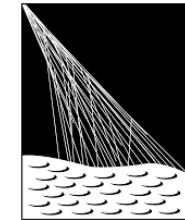
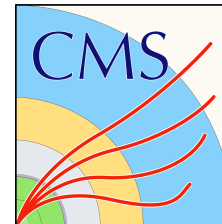
# European Particle physics Latin American Network EPLANET



The program started on Feb 1, 2011 and ended 31 January 2016.

- Coordinators Prof. Luciano Maiani and Dr. Veronica Riquer,
- Financial support from EU

Argentina	Italy (Coordinator)
Brazil	France (CERN)
Chile	Portugal
Mexico	Spain



PIERRE  
AUGER  
OBSERVATORY

The project is structured through a set of 9 work packages addressing the mobility of **Early Stage Researches (ESR)** and **Experienced Researchers (ER)** to those installations where most of the research works in High Energy Physics.

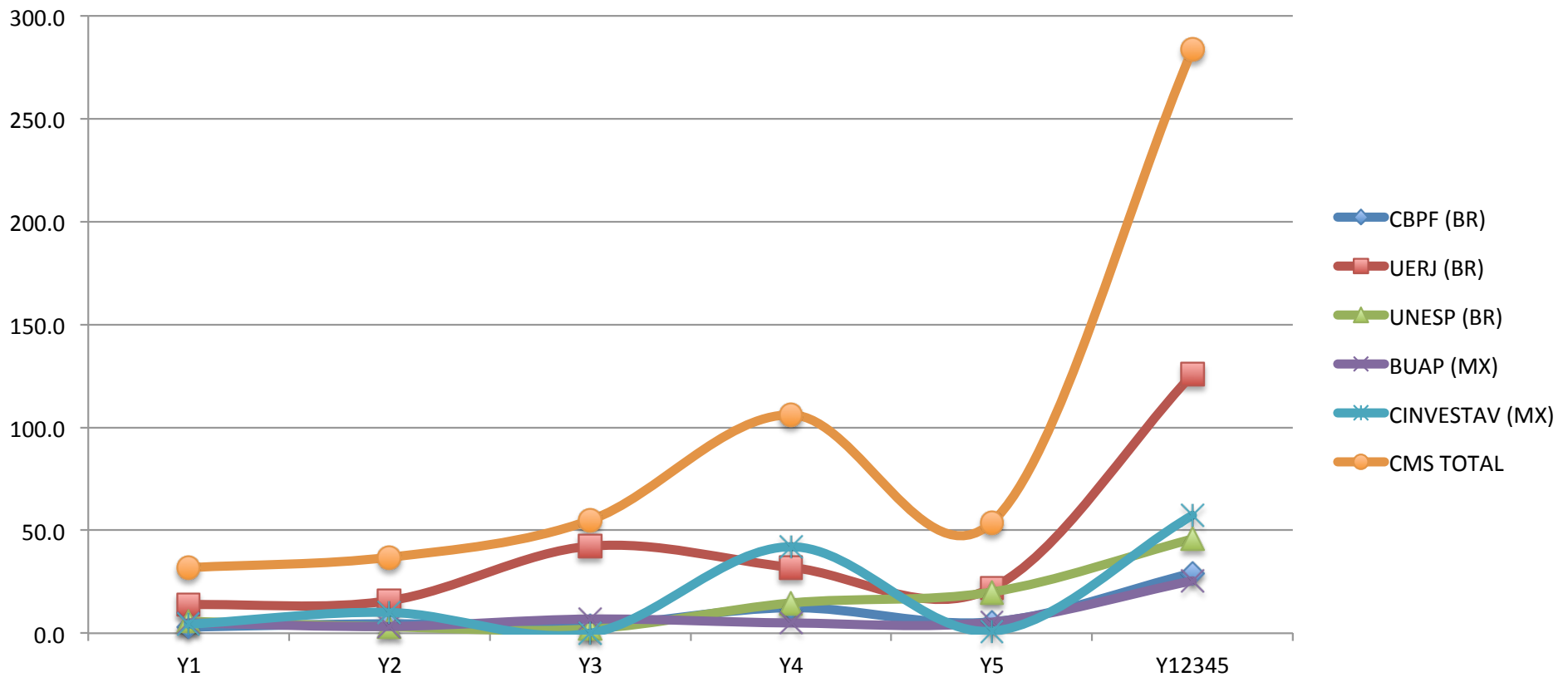
**Objectives for CMS were : Data taking at CERN, Detector hardware, Computing, Physics Analysis**



# European Particle physics Latin American Network EPLANET



- CMS used 100% the allocated quota during the 5 years of the program.
- 284 months were used for visits from Latin America to CERN
- 10 months (by 13 CMS physicists) for visits from CERN to Latin America.



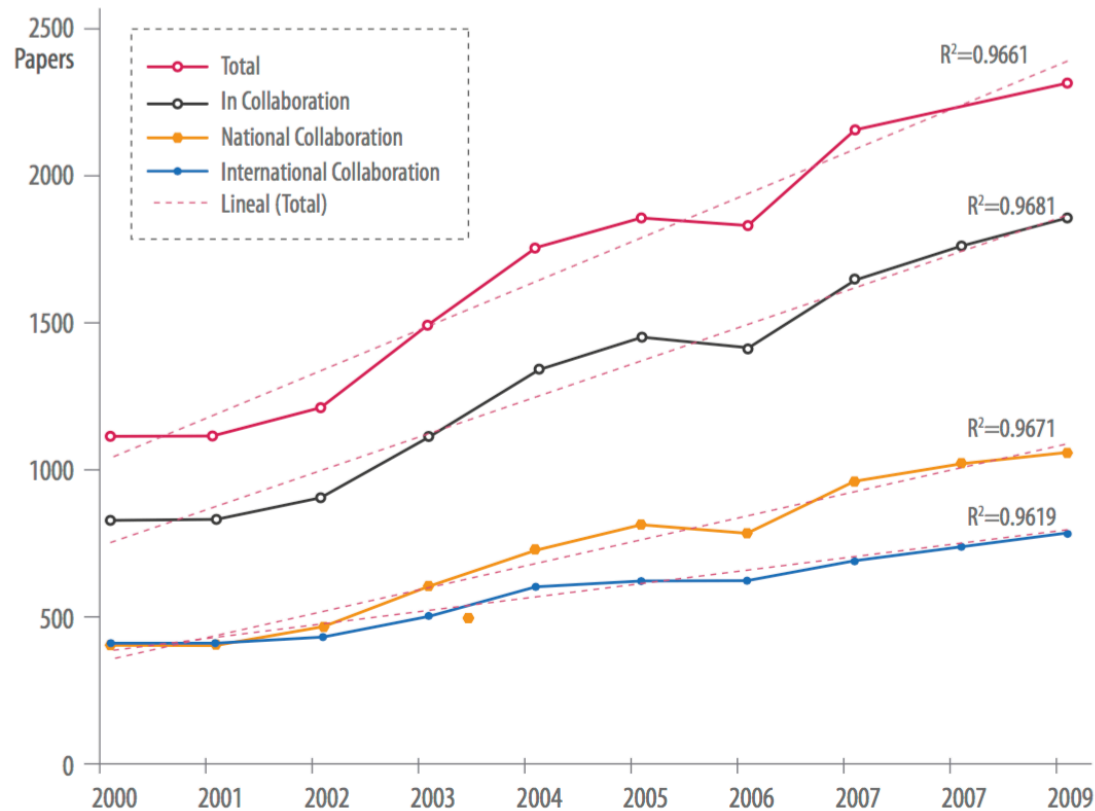
A new proposal for EPLANET-UP has been submitted to the Horizon 2020

Kirsti Apostola EPLANET report, June 2014

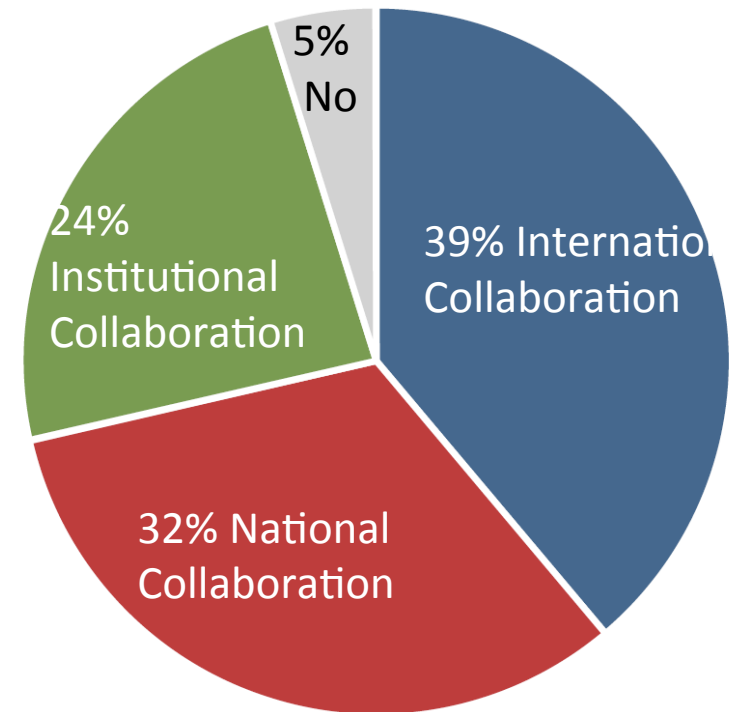
# Increasing diversity through collaborations

- Collaborative programs is a gate to increase diversity
- Clearly increase the scientific production

## National Papers in Chemistry with Mexican Authors



## Published papers at Autonomous University of Puebla



Foro consultativo científico y tecnológico, Taller sobre indicadores en Ciencia y Tecnología en Latinoamérica, 2014, ISBN: 978-607-9217-46-4

<https://www.elsevier.com/solutions/scival>

# Conclusions



- A science working to its full potential is one that incorporates diversification.
- Lack of diversity within the scientific community can result in a limited number of questions we ask, the type of problems we think and the way to solve them.
- Governmental collaborative programs clearly play an important role by encouraging individuals from different backgrounds to combine efforts in scientific research.
- **Challenges Entailed in Program Start-Up**
  - Sufficient funding to launch proposed program
  - Legal or regulatory issues
  - Health and safety issues

*Robin Matross Helms, Mapping International Joint and Dual Degrees, 2014 American Council on Education*