

CERN Summer Study 2011

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Accelerating
Science



Flow of the talk:

- ❖ Brief description of CERN
- ❖ Activities during the Summer Study
 - Lectures
 - Work project
 - Social life
- ❖ What do you need to be successfully accepted to the most prestigious CERN Summer Study

CERN

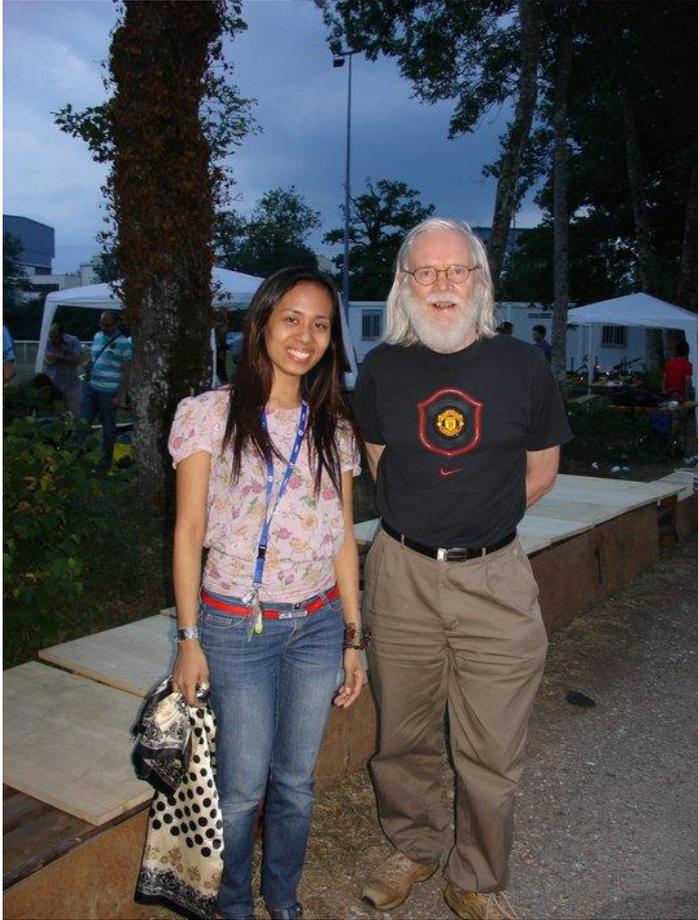
- One of the world's largest and most respected centre for scientific research.
 - it is the UN of Science- it unites scientists and engineers from different countries and culture
- It operates the largest and most powerful particle collider- The Large Hadron Collider (LHC)



Lectures

- If you will spend two months, typically for non-member states like Philippines, the series of lectures are given in the first six weeks.
- Done in the morning, 9:15 am- 12:00 pm. Three lectures per day at the CERN auditorium, bldg 500.
- Delivered mostly by world-renowned scientists around the world
- 11:15- 12:00 pm is for Q&A. As very passionate scientist or aspiring to be, this is your chance to interact with the experts! They also offer their emails for further inquiries!
- I have copies of all the lectures. If you are interested, you can get the copies from me.

Photos with science celebrities



With John Ellis



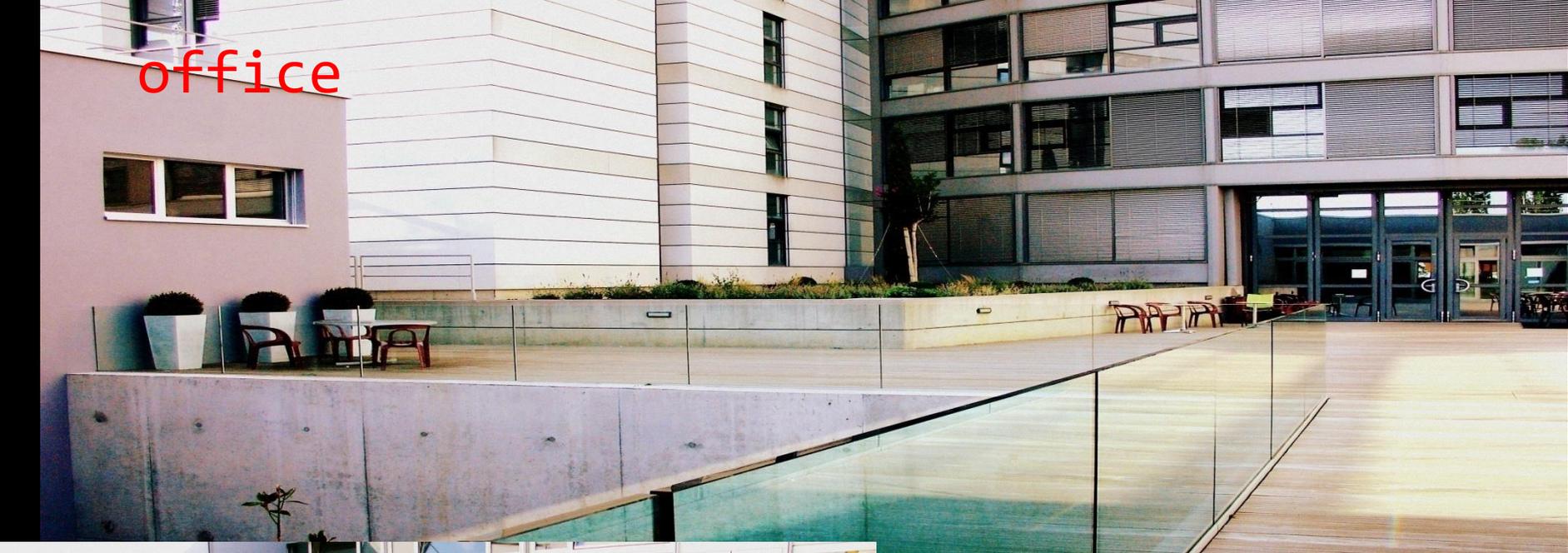
With Georgi (Gia) Dvali, one of the proponents of ADD model

Work Project

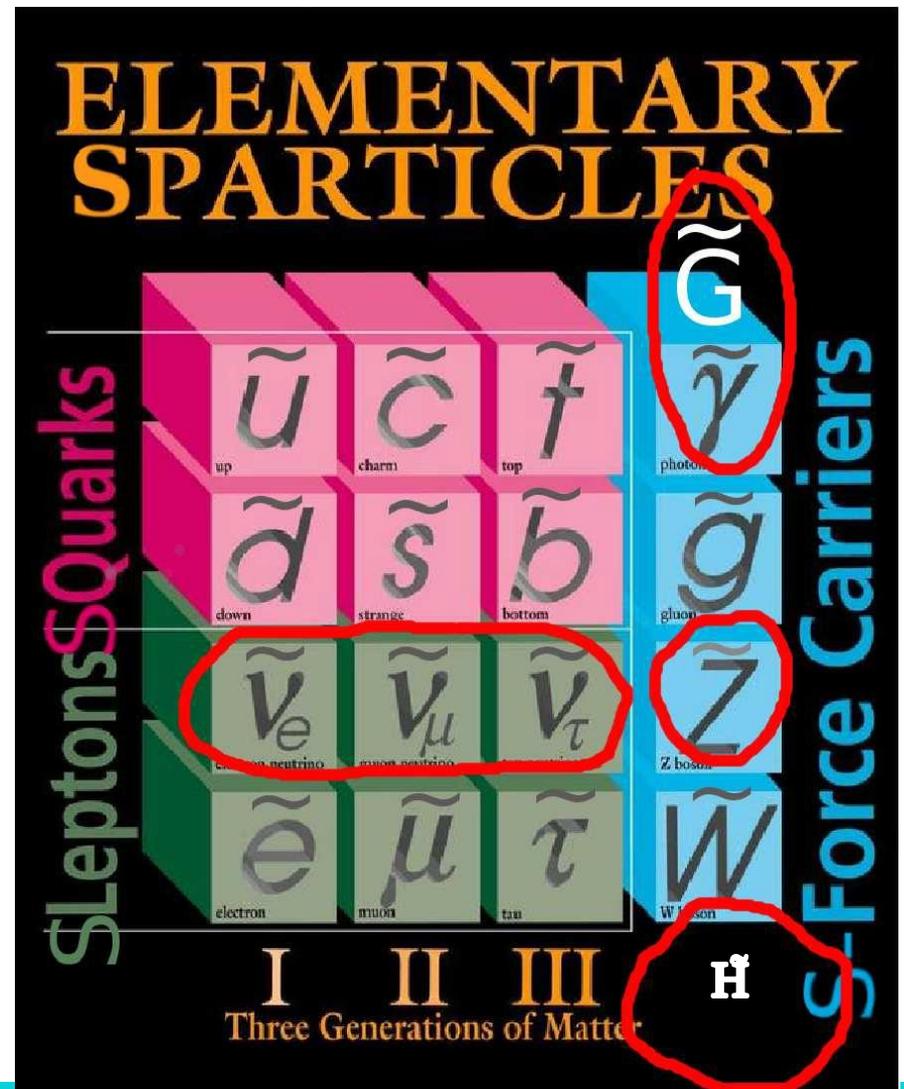
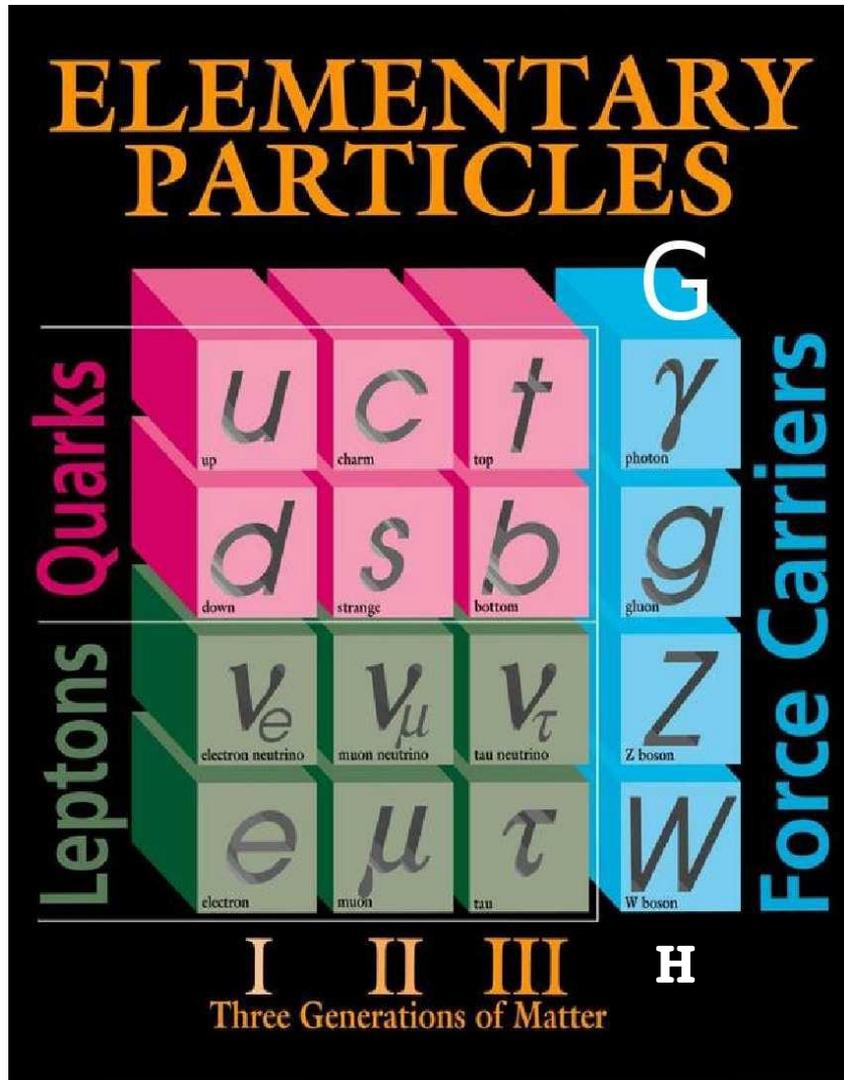
- After lectures and lunch break, we go to our respective offices to do our WP
- My WP is **searching for new physics beyond standard model**.
 - ✓ monojet events (single energetic jet) with missing transverse energy (MET) as a signature of SUSY
- Before real physics analysis, you must learn some computing techniques. (This will depend on the work project assigned to you.)
 - ✓ Mostly they use C++, Root, Python, Pythia (event generator), MC, etc.
- At the end of the study, you are required to submit a report about your work project.



office



Supersymmetry

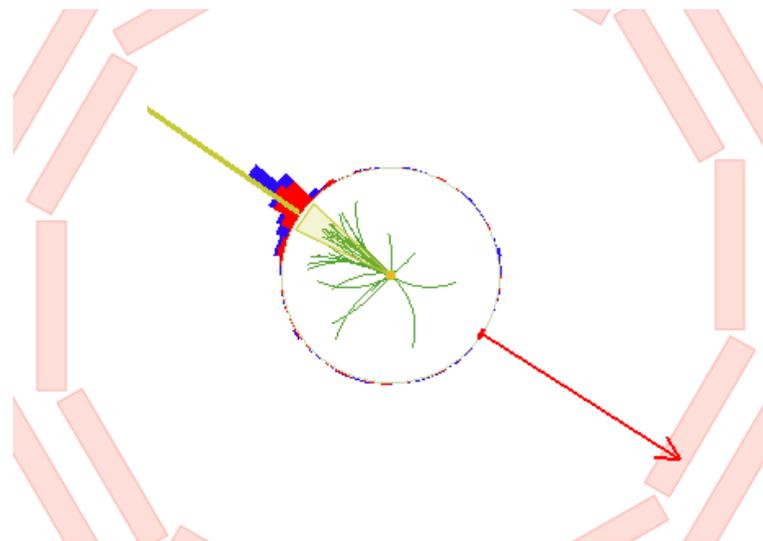
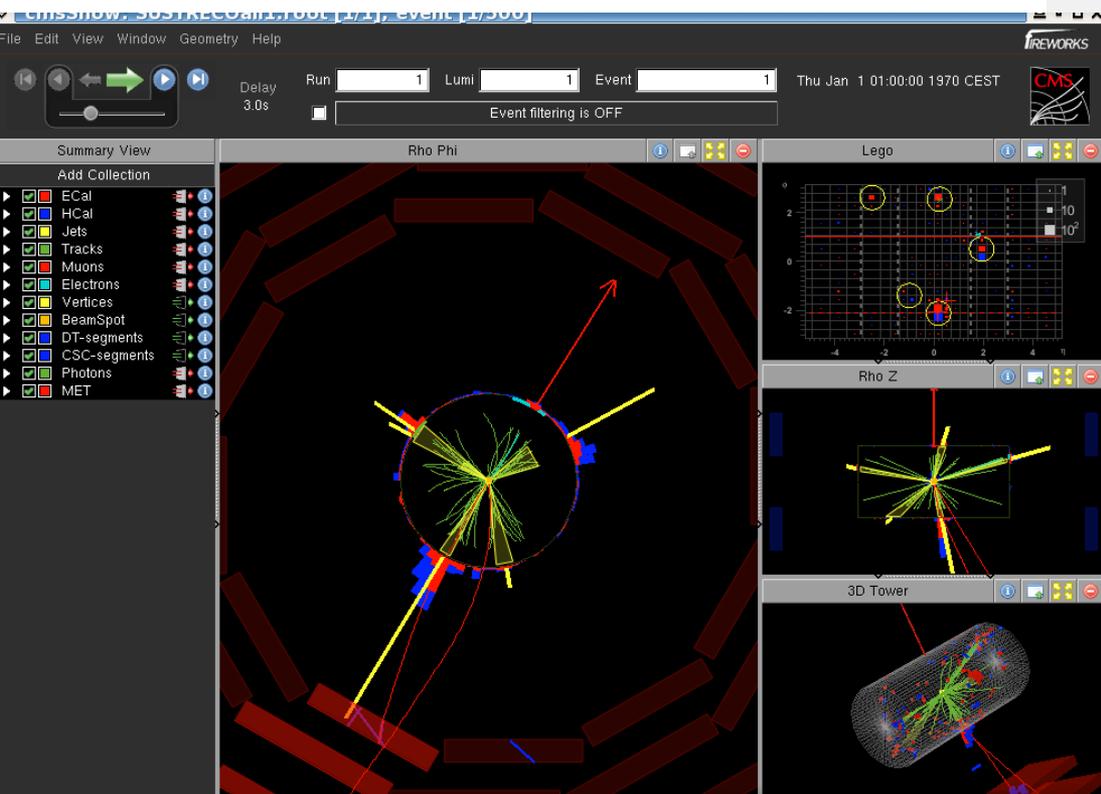
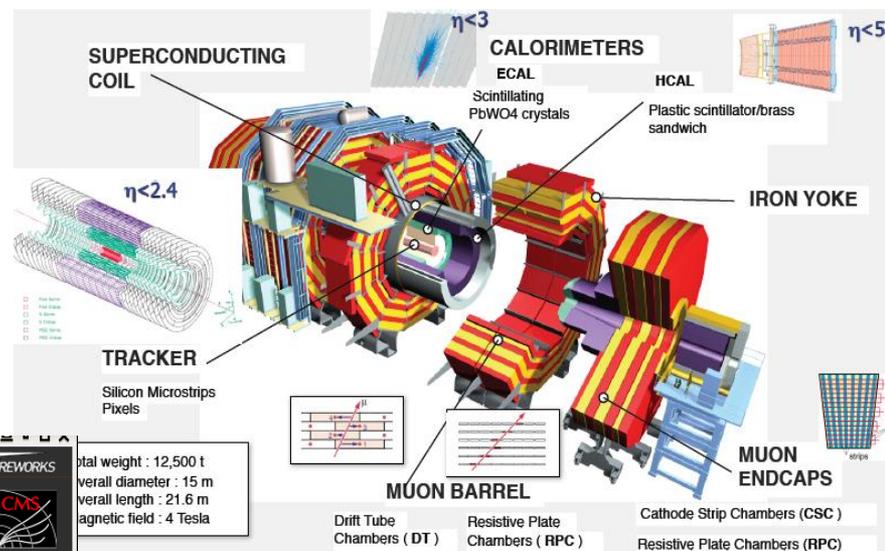
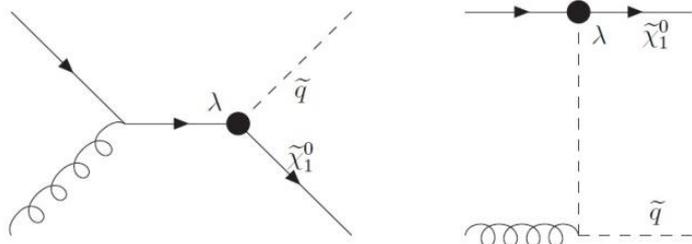


Monojet signal analysis

- **Monojet (P_T)- single energetic jet. Largest momentum**
- **Missing transverse energy (MET)- same magnitude with P_T and typically back to back**
- **Events – happening resulted from pp collisions**
- **Signals- what we want**
- **backgrounds- what we don't want**
 - **Major backgrounds: $Z(\nu\bar{\nu})$ +jet, $W(e\nu)$ +jet, $W(\mu\nu)$ +jet, $W(\tau\nu)$ +jet, QCD**

Monojet events with missing transverse energy (MET) as a signature of SUSY (CMS analysis)

Signal process



Social Life

- I usually shopped, ate my meals, and roamed around with random people (that became my friends) from all over the world! CERN is an international institution
 - ✓ By gaining friends, you can also learn a lot from them. I hate to say networking as I can passionately say “I am their friend and they are friends” until now.
- Apart from queues and hectic schedules, try to attend parties and other activities! There are student-organised parties, BBQ’s, group travel, hiking, etc!
- You can also join clubs like dancing, martial arts, or fitness clubs, etc
- You can play random board games at R1, near the hostel, bldg. 38
- You can do outdoor games, usually organised by summer students themselves.



What do you need to be successfully accepted to the most prestigious CERN Summer Study?

→ AUDACITY, aka guts



anna marie benzon

विद्यया विद्युत्सम्पत्तिं प्राप्नुते अस्मिन्-सर्वे
सर्वकार-विद्युत्सम्पत्तिं प्राप्नुते, अस्मिन्-सर्वे
सर्वकार-संस्थायां अस्मिन्-सर्वे
सर्वकार-संस्थायां अस्मिन्-सर्वे

Conclusion

- ❖ CERN is not only the **most prestigious research centre** in the world, but the right environment to explore and have a deeper insight on the multi-dimensional cultures of people around the world.
- ❖ it accelerates science and pushes beyond its limit.
 - ✓ it unveils another science milestone- checking our theories and possibly creating new Physics
- ❖ it also accelerates innovation and technology in terms of big data management, biomedical applications, energy resources, etc.

THANK YOU!!!