

CERN-TH institute on LHC-cosmology interplay

Miniworkshop

Sabine Kraml • opening remarks

TH institutes

- The CERN Theory Division has restructured its visitors program, giving it more focus and impact through topical “theory institutes”.
- Three programs approved in 2007:

Heavy Ion Collisions at the LHC (14 May - 8 June 2007)

Review and document the status of expectations and predictions for the heavy ion program at the LHC.

Organizers: Nestor Armesto, Nicolas Borghini, Sangyong Jeon; Urs Wiedemann (local).

LHC-Cosmology Interplay (25 June - 10 Aug 2007)

Work out what we may learn from discoveries at the LHC about the Early Universe.

Organizers: John Ellis (local); Sabine Kraml, Michael Plumacher.

BSM Institute: New Physics and the LHC (13 Aug - 7 Sep 2007)

Gather model-builders, string theorists and collider phenomenologists to prepare for the turn on of LHC.

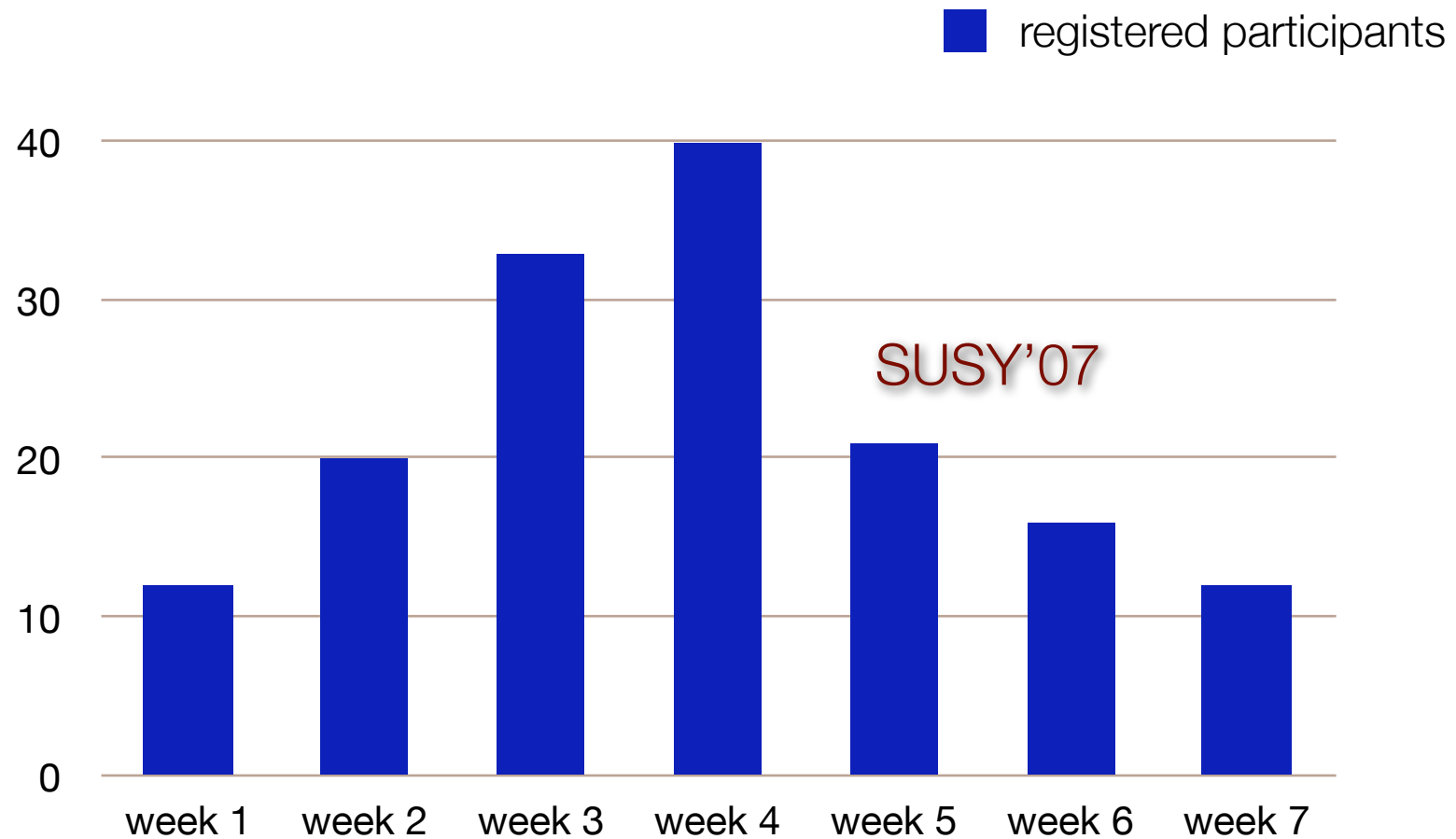
Organizers: Antoniadis, Giudice, Grojean (local); Arkani-Hamed, Dimopoulos, Dvali, Rattazzi.

- Conventional short-term visits, not related to any TH institute, are of course still possible in their usual form.

LHC-cosmology interplay program

- Focuses on “*the interplay of LHC phenomenology and cosmology, with the aim to work out what we may learn from discoveries at the LHC about the Early Universe*” [see John’s talk](#)
- Date: 25 June - 10 Aug 2007 (7 weeks)
- Two parts:
 - ▶ dark matter and the LHC 25 June - 20 July
 - ▶ baryo/leptogenesis and the LHC 16 July - 10 Aug
 - ▶ overlap week 16-20 July with miniworkshop
- Ca 50 participants, both particle physicists and cosmologists; opportunity for active and vivid interactions

Number of participants per week

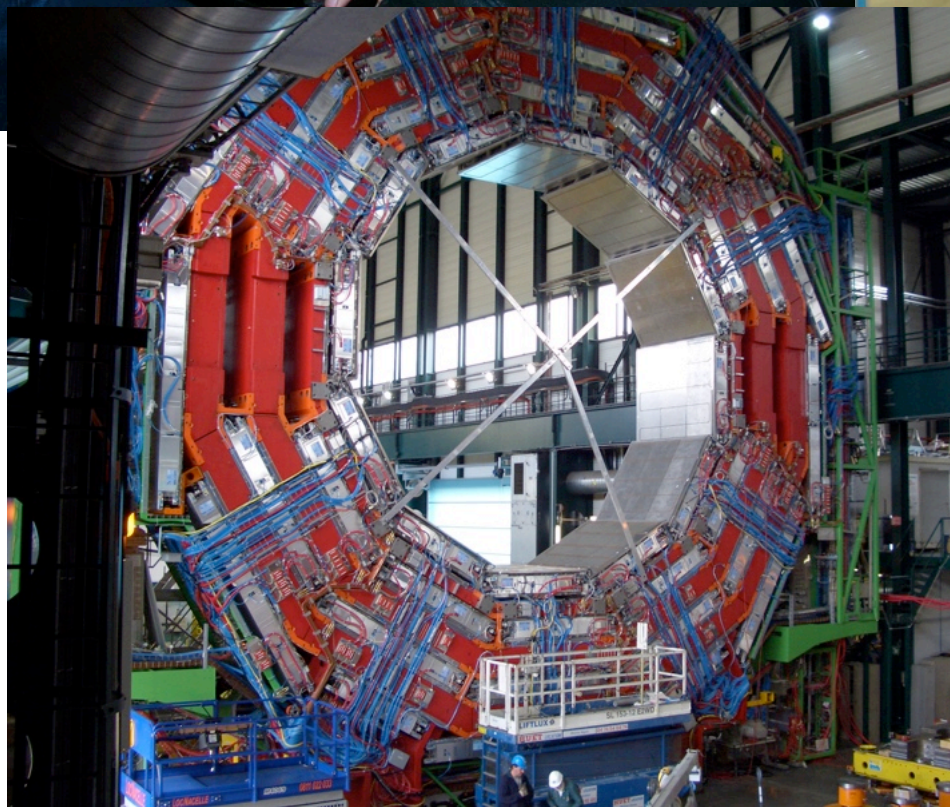


in total ~154 person weeks,
plus some other visitors and members of the division.

A typical week

Mon+Tue	10:30 coffee + discussions 15:30 coffee + discussions
Wed+Thu	10:30 coffee meeting 11:00 journal club 14:00 seminar 15:30 coffee + discussions
Fri	10:30 coffee + discussions 14:00 seminar

Integrated in the scientific life of the division



These first 4 weeks

6 topical discussion sessions (+ informal discussions)

6 journal club presentations

6 seminars

16 miniworkshop talks

Balanced, productive,
too little, too much?

👉 need your [feedback](#)



Radiative gravitino decays from R-parity violation

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ABSTRACT

We study radiative gravitino decay within the framework of R-violating supersymmetry. For trilinear R-violating couplings that involve the third generation of fermions, or for light gravitinos, we find that the radiative loop-decay $\tilde{G} \rightarrow \gamma\nu$ dominates over the tree-level ones for a wide set of parameters. We calculate the gravitino decay width and study its implications for cosmology and collider physics. Slow-decaying gravitinos are good dark matter candidates, for a range of parameters that would also predict observable R-violating signatures in colliders. In general the branching ratios are very dependent on the relative hierarchies of R-violating operators, and may provide relevant information on the flavour structure of the underlying fundamental theory.

Open question:

Do we want to produce a **report** ?

Next: Interplay by John