

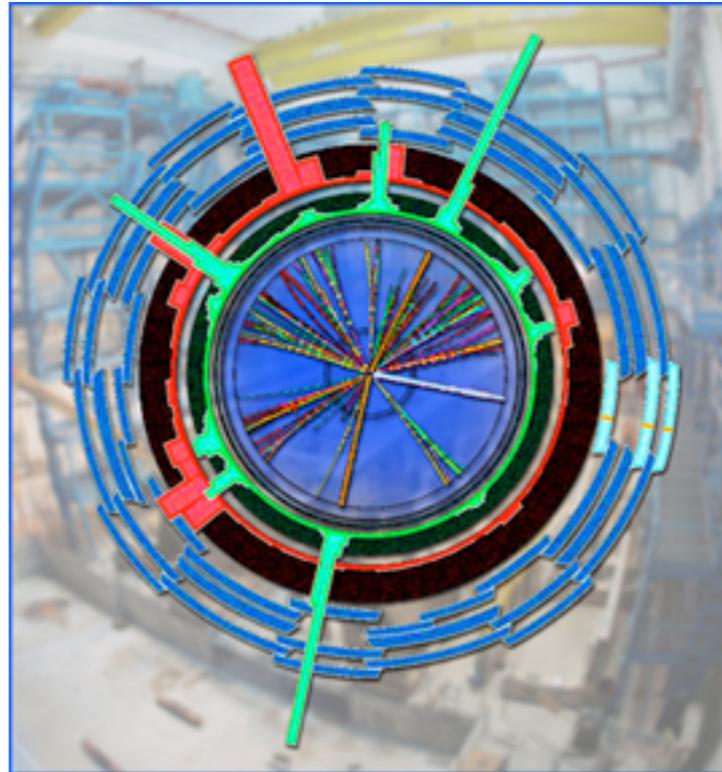
Implications of LHC results for TeV scale physics  
Working Group 2



Signatures with

# Missing Energy

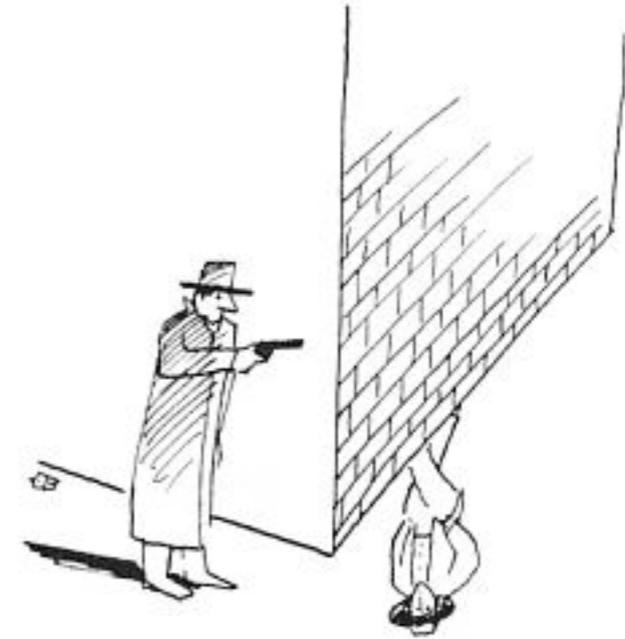
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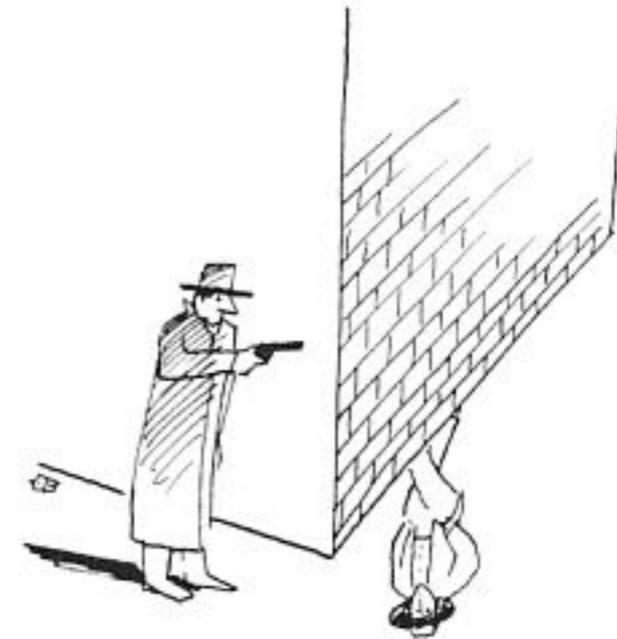
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# New Physics just around the corner?



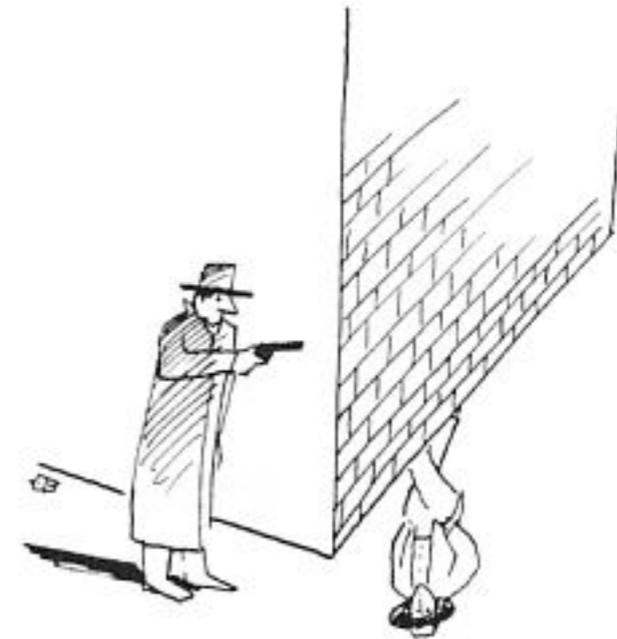
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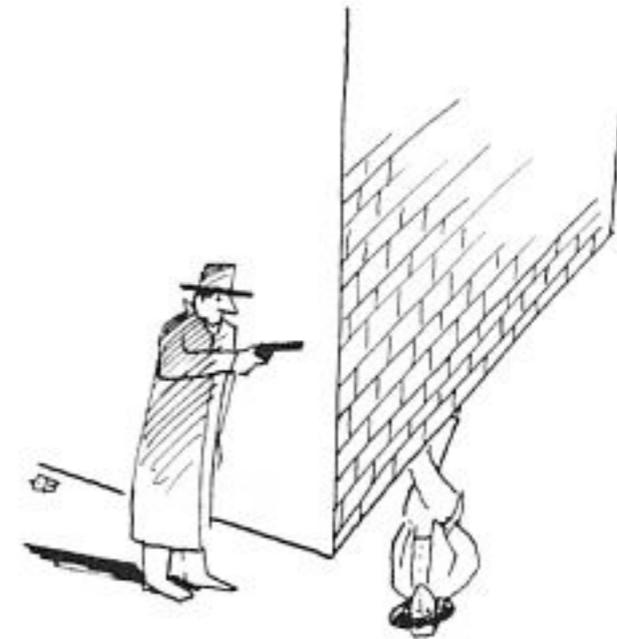
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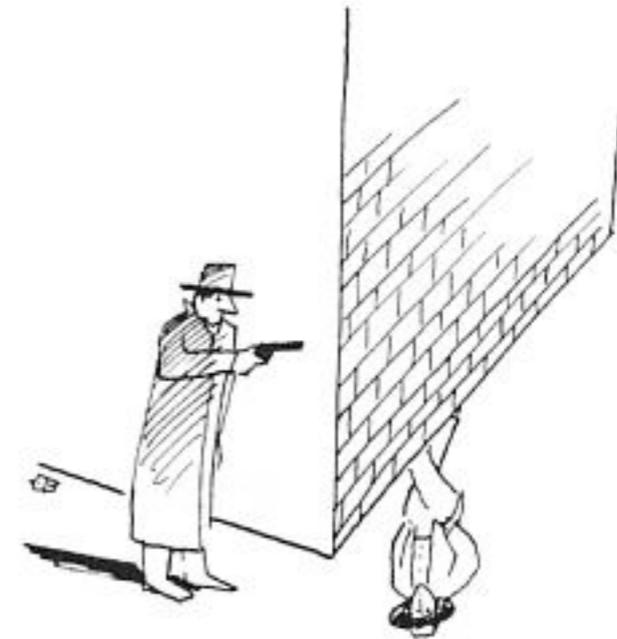
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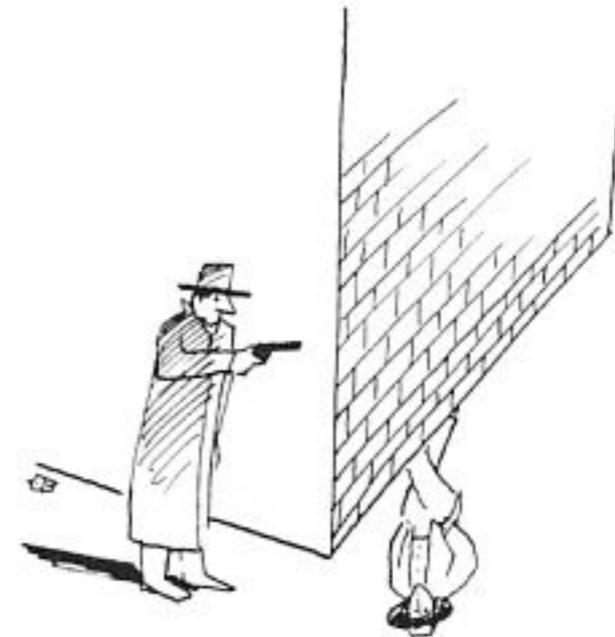
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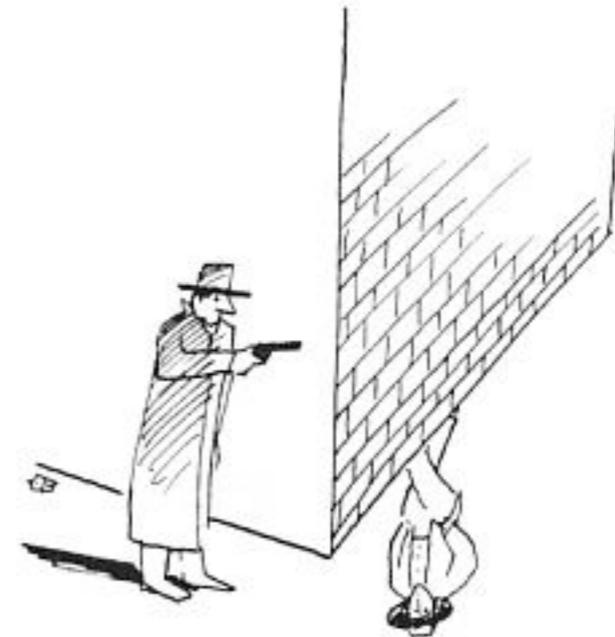
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- Are there loopholes in the searches?
- If nothing's there, than what?



# WG2 plenary program (now)

- 9:10     **ATLAS overview of MET searches** 45'  
Renaud Bruneliere
- 9:55     **CMS overview of MET searches** 45'  
Sanjey Padhi
- break
- 11:00    **Overview of SUSY global fits** 30'  
John Ellis
- 11:30    **Non-SUSY scenarios with MET signatures** 30'  
Ben Matthew Gripaios
- 12:00    **Fine tuning and the scale of new physics** 30'  
Riccardo Barbieri

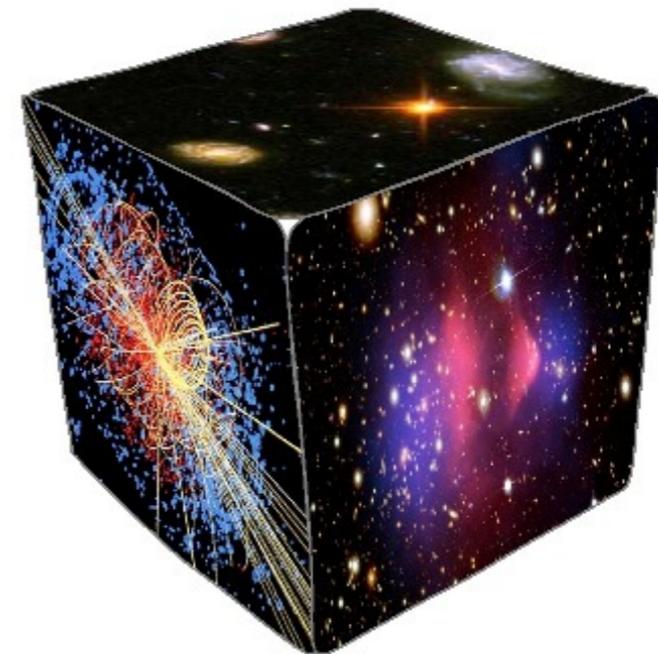
# MET signatures $\leftrightarrow$ BSM dark matter

*“It is impossible to overestimate the importance of discovering dark matter at the LHC. Such a discovery will imply a revision of the SM, it will strengthen the connection between particle physics, cosmology and astrophysics, and it will enormously enlarge our understanding of the present and past universe.”*

G.F. Giudice, *Theories for the Fermi Scale* (2007)

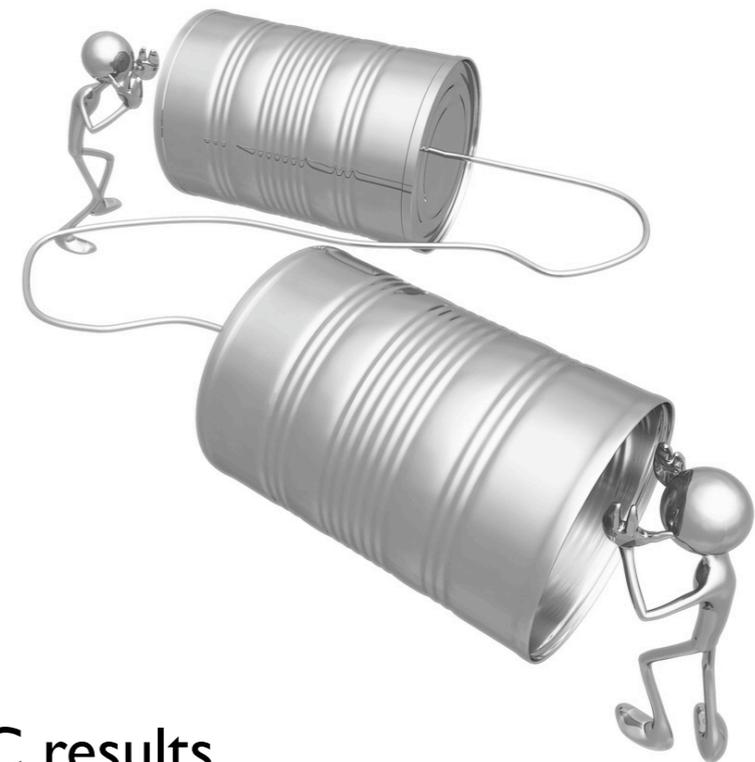
- The existence of dark matter is arguably our clearest indication of new physics today.
- The need to stabilize the EW scale lets us expect new physics at the TeV scale. This new physics may well provide the DM of the Universe  $\rightarrow$  MET signatures

nb: this is generic, beyond SUSY



# Theory ↔ Experiment communication

- To test the plethora of models, perform global fits, explore loopholes, etc., we need more than only limit plots.
- What information can/should experiments give to the community?
- Vivid discussions already at previous workshops, LPCC, BSMfit, PhysTeV ... “Les Houches recommendations”
- Related question: what can we learn from, and what are the limits of, simplified models?



Crucial for understanding the implications of LHC results



**need active discussions  
and cross-talks between WGs**

EWWSB and BSM are tightly related issues

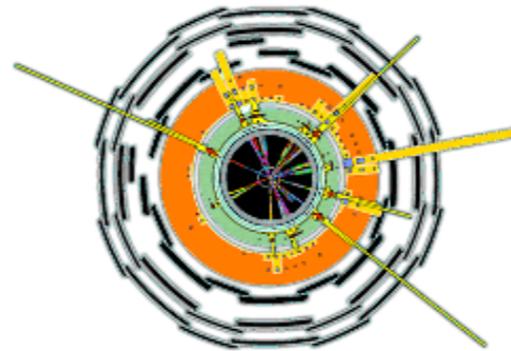
# WG2 parallel sessions

<b>Tue</b>	14:00 - 15:30	Results from ATLAS and CMS searches Jets+MET, 0 leptons, w/leptons, w/photons, benefit of different channels
<b>Wed</b>	16:30 - 18:00	SUSY/BSM with and without prejudice global fits, pMSSM interpretation, “effective” dark matter
<b>Thu</b>	11:00 - 12:30	More on MET searches and discussion of implications simplified models, b’s+MET, other BSM searches w/MET
	14:00 - 15:30	Joint WGI-WG2: Higgs and New Physics
	16:00 - 18:00	Joint WGI-WG2-WG3: Flavour physics signatures
<b>Fri</b>	09:00 - 10:30	Interplay/Brainstorming & Future Directions for WG2 Limitations of present searches, difficult models

time for discussions foreseen in each session

Implications of LHC results for TeV scale physics

Welcome to  
**Working Group 2**



Signatures with  
**Missing Energy**

Conveners:

Rick Cavanaugh (CMS), Giacomo Polesello (ATLAS),  
JoAnne Hewett & Sabine Kraml (Theory)

**just kicking off, please join and contribute**





There's a beautiful target out there