

Some inputs from LHC Dark Matter Working Group

The LHC DM WG organizers

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HL-LHC Meeting in preparation for ECFA 2016

LHC Dark Matter Working Group (2015-)

http://lpsc.web.cern.ch/lpsc/index.php?page=dm_wg

The LHC Dark Matter Working Group (LHC DM WG) brings together **theorists** and **experimentalists** to define **guidelines and recommendations** for the **benchmark models, interpretation, and characterisation** necessary for **broad and systematic searches** for dark matter at the LHC.

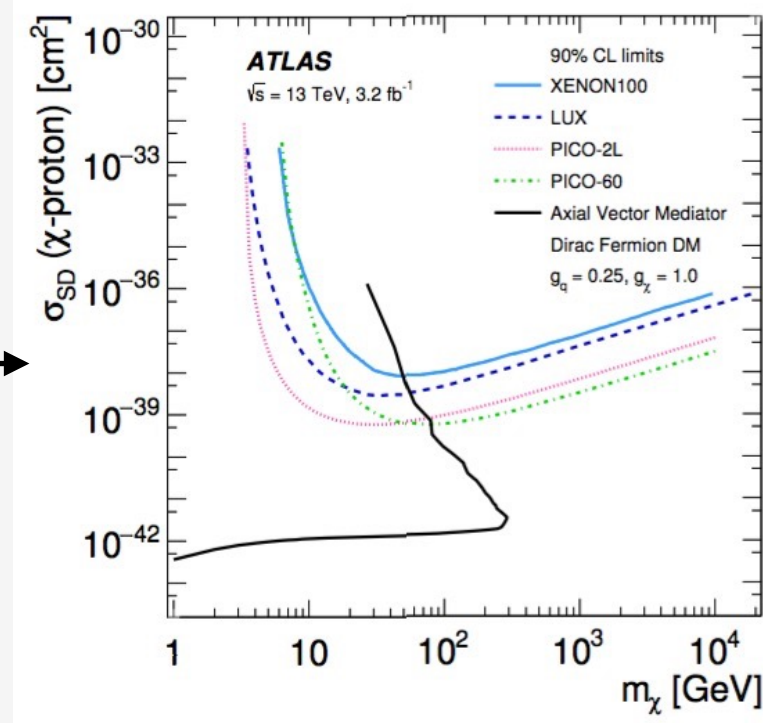
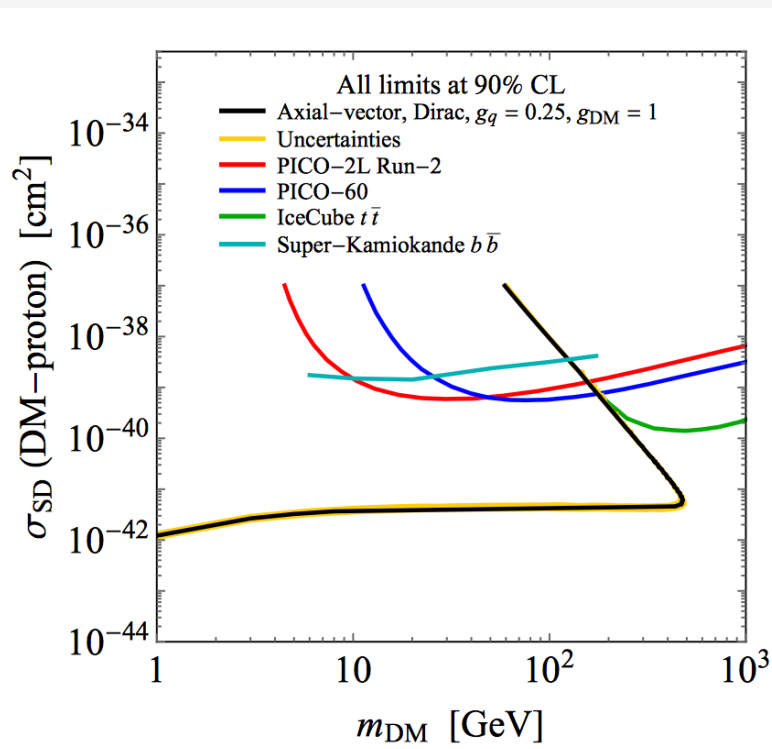
The LHC DM WG develops and maintains close connections with theorists and other experimental particle DM searches (e.g. Direct and Indirect Detection experiments) in order to help **verify and constrain particle physics models of astrophysical excesses**, to understand how collider searches and non-collider experiments **complement** one another, and to help build a **comprehensive understanding** of viable dark matter models.

First topic: translation of LHC simplified model results into DM-nucleon cross-section plane (DD/ID)

<http://arxiv.org/pdf/1603.04156.pdf>

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Recommendations on presenting LHC searches for missing transverse energy signals using simplified s -channel models of dark matter



What next for LHC DM searches?
long-term statement will also depend on DD/ID reach

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Present and Future of DMWG

Opportunities for synchronised studies between 13 TeV LHC and HL-LHC studies

List of potential DM WG topic ideas: [google document](#) (editable via comments) including:

- reduction of theory systematic uncertainties for V+jet control regions for monoX
 - synergy with SM theory, SUSY searches have similar issues
- beyond current set of simplified models:
 - new models motivating new searches
 - refinement of current models and scans

M. Wielers

✦ Discovery reach extended from 2.2 TeV (300fb⁻¹) to 2.6 TeV (3ab⁻¹) assuming bkg systematics known to 1% level

Meeting towards decision of future directions: <http://doodle.com/poll/myxihz3h65pukugq>

Mailing lists:

- lhc-dmwg@cern.ch, used by conveners to distribute general information about the group activities
- lhc-dmwg-contributors@cern.ch, a higher volume list for day-to-day discussions in detail

<http://doodle.com/poll/myxihz3h65pukugq#table>