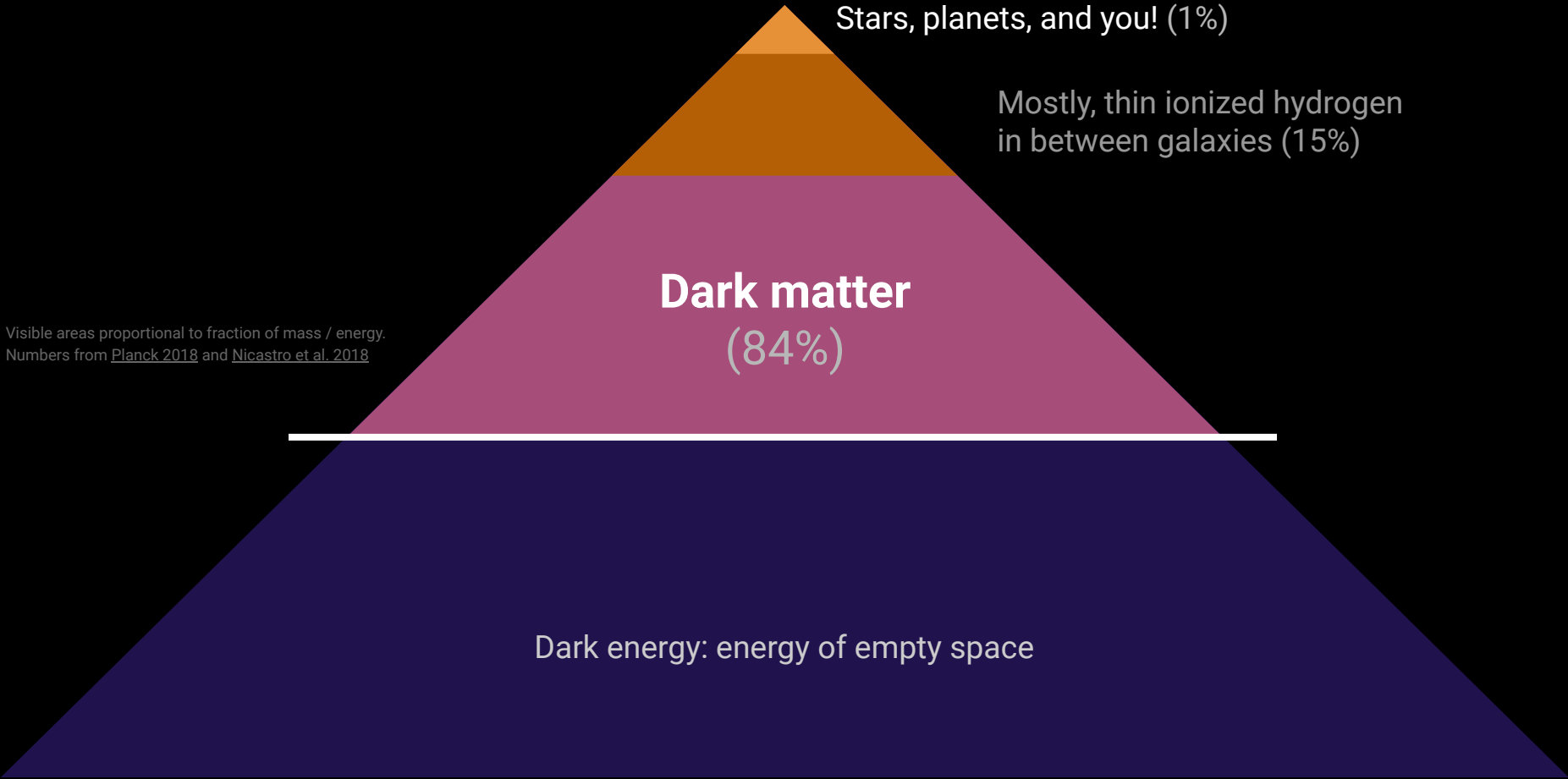


Dark matter outweighs regular matter 5 : 1 !



Stars, planets, and you! (1%)

Mostly, thin ionized hydrogen
in between galaxies (15%)

Dark matter
(84%)

Dark energy: energy of empty space

Visible areas proportional to fraction of mass / energy.
Numbers from [Planck 2018](#) and [Nicastro et al. 2018](#)

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- Auke-Pieter Colijn
- Patrick Decowski [PL]
- Tina Pollmann

Groningen Faculty Member

- Jelle Aalbers [re-new]

2 Postdocs

- James Mead
- Maxime Pierre

7 PhDs

- Maricke Flierman
- Carlo Fuselli
- Peter Gaemers [defense May 21]
- Pranati Kharbanda [new]
- Saad el Morabit [new]
- Marjolein van Nuland-Troost [with Neutrino Group]
- Kelly Weerman

5 MSc students

6 BSc students



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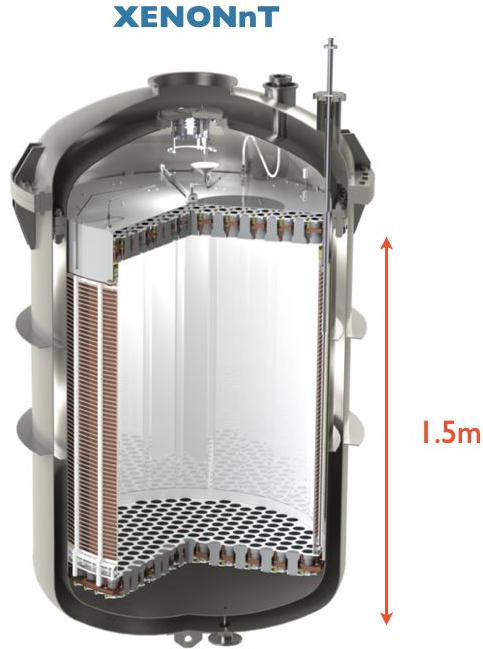




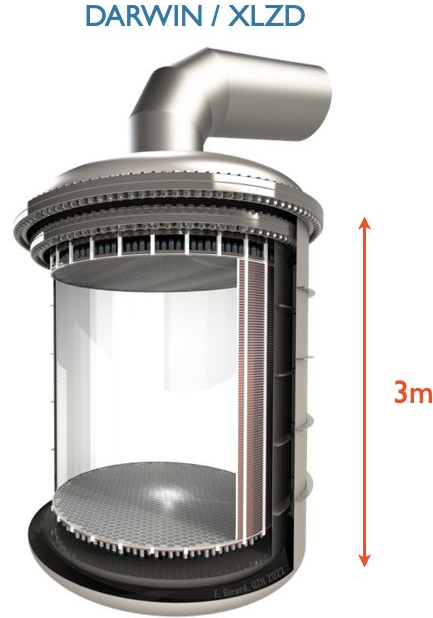
university of
groningen

Liquid Xenon based Rare Event Experiments

Main activity: 1. Search for Galactic Dark Matter, e.g. WIMP, axion, ALPs
2. Neutrinoless double beta decay

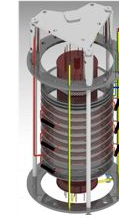


1 postdoc, 5 PhD, 2 MSc

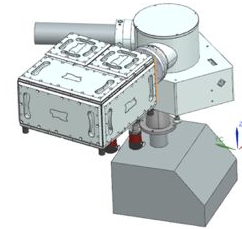


Our Lab

XAMS R&D



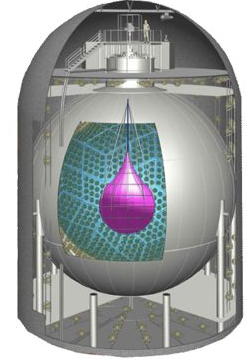
VULCAN R&D



1 PhD, 2 MSc, 2 BSc

Small Contributions

KamLAND-Zen

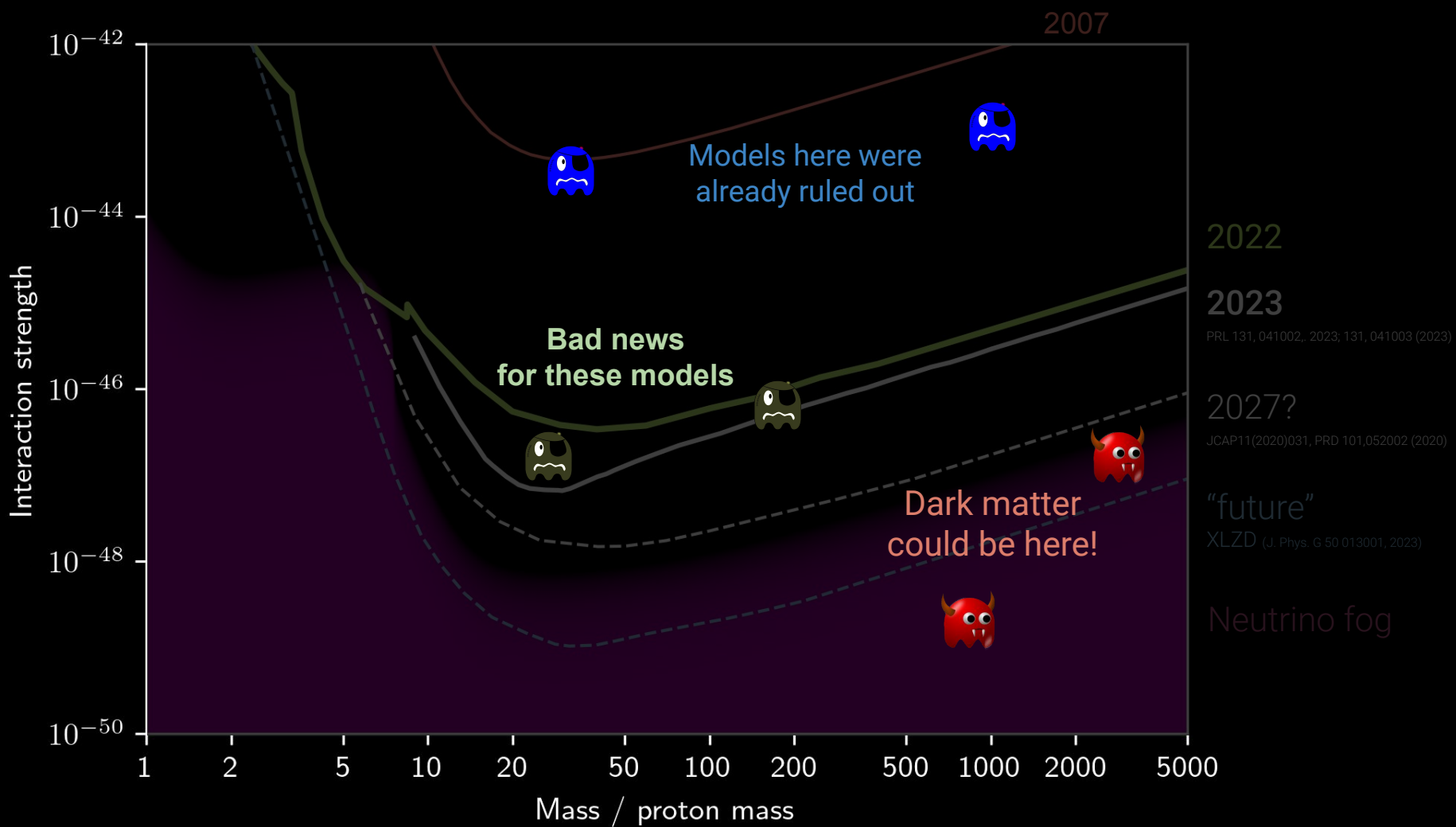


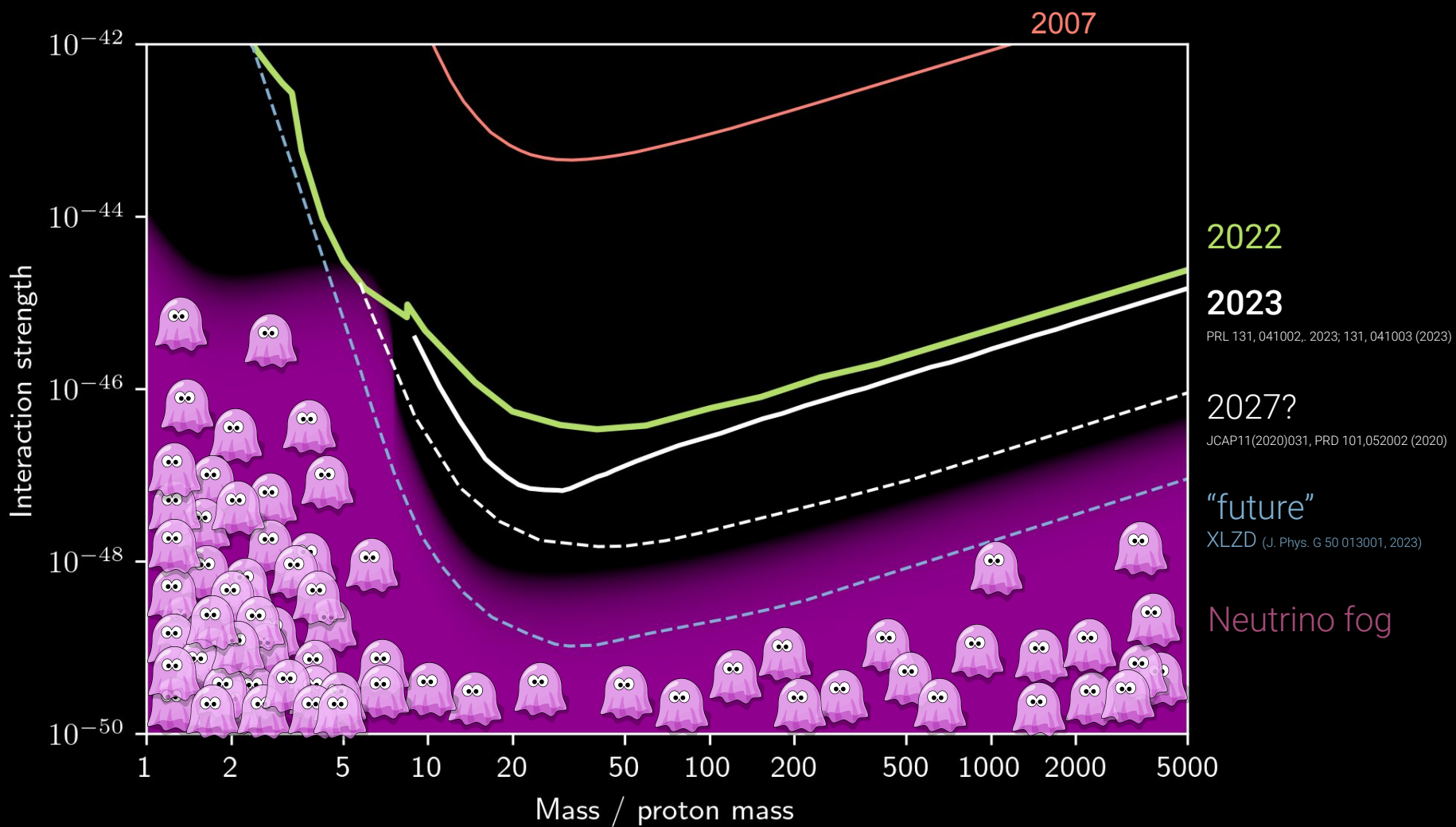
1 PhD, 1 MSc

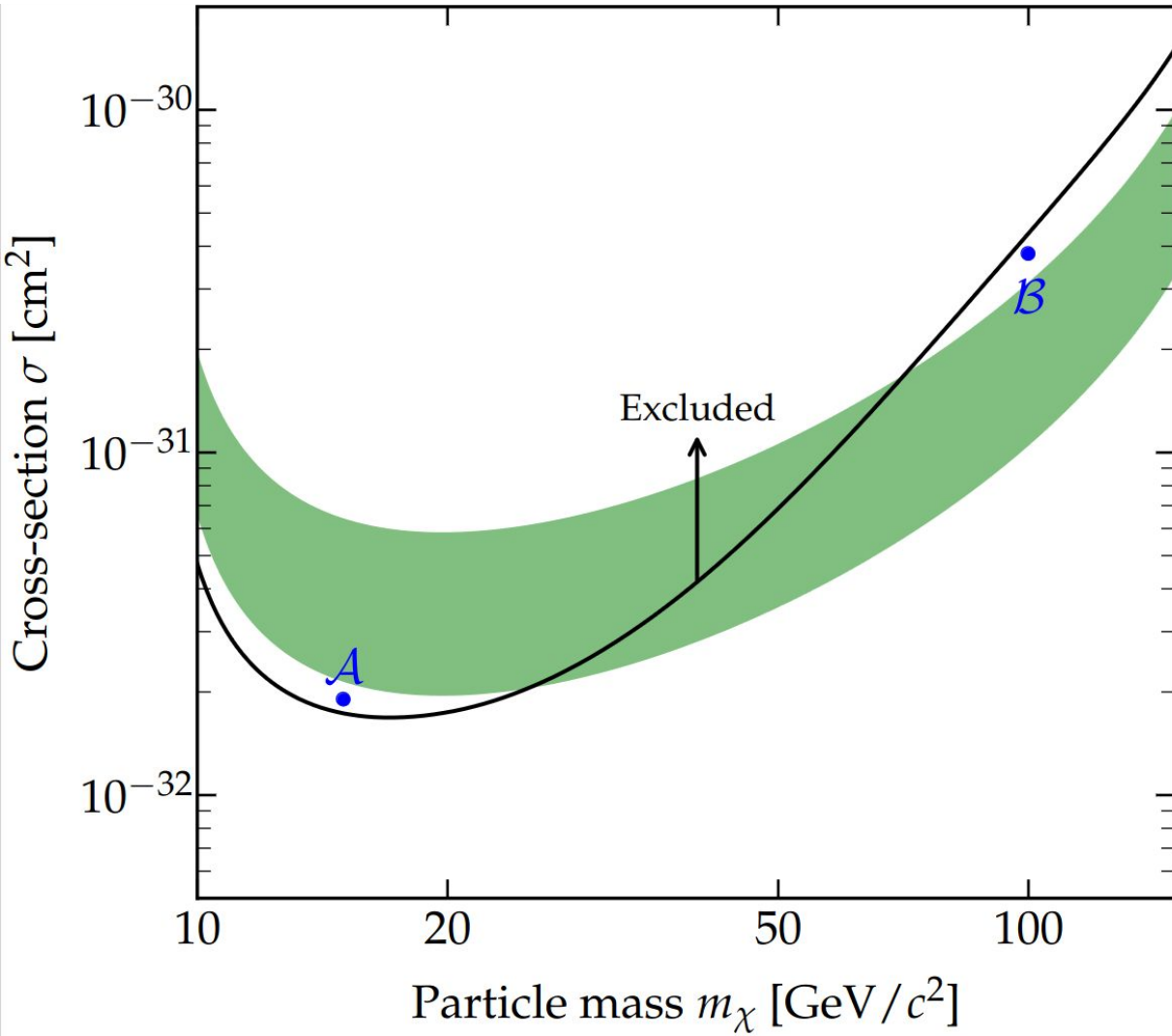
PTOLEMY R&D



1 postdoc



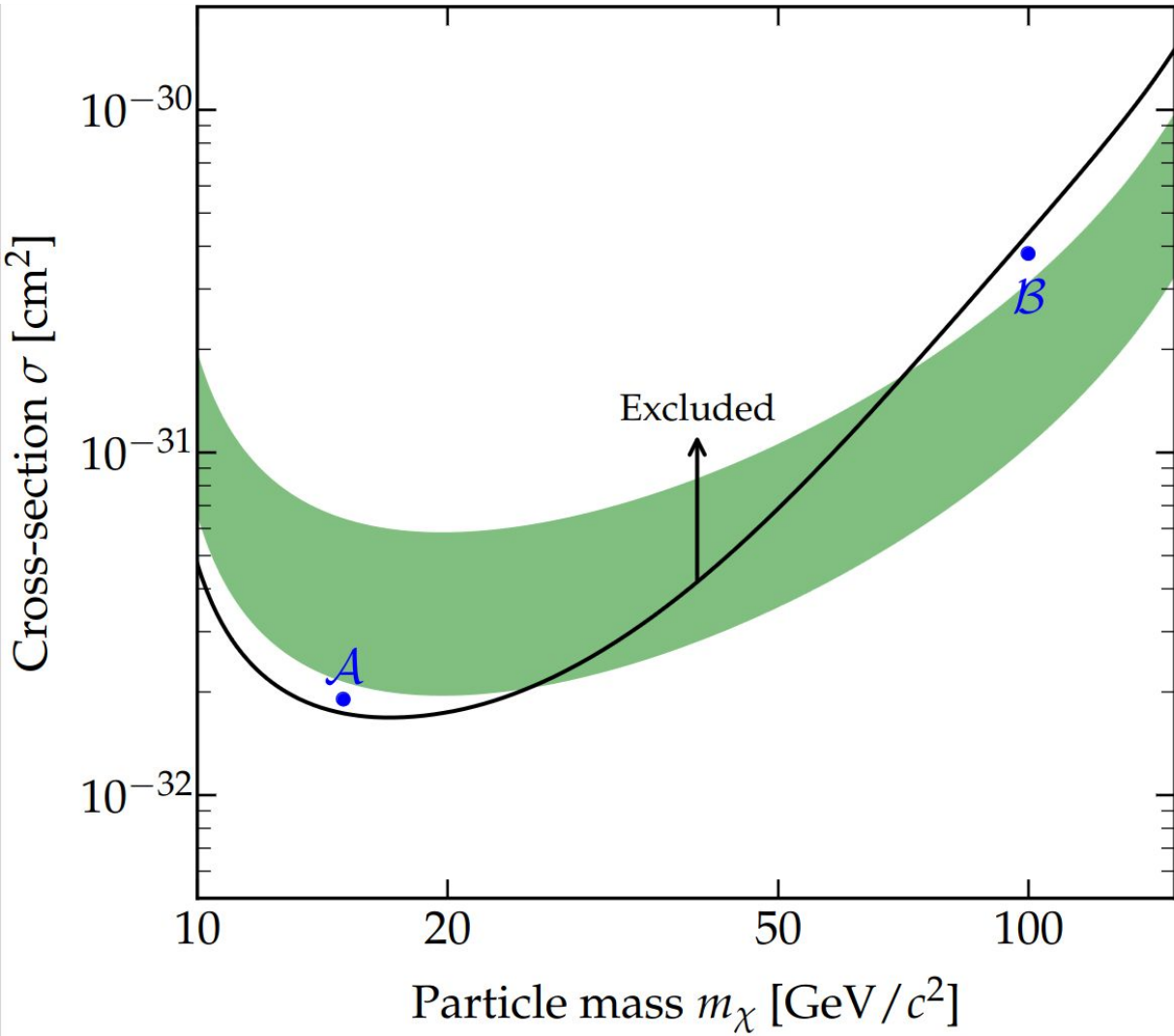




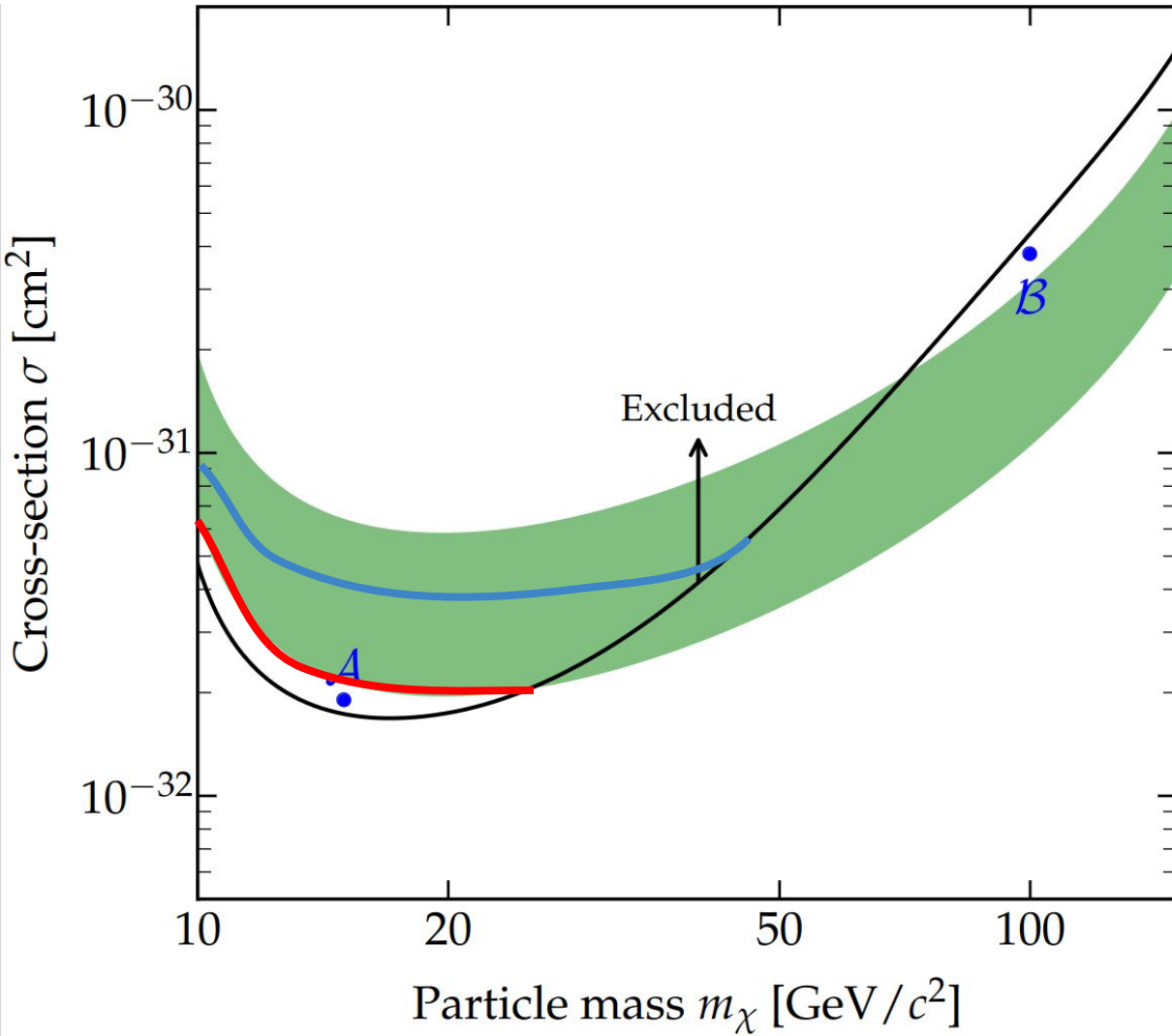
Which theory is happier?

Green: sensitivity band,
expected limits if no DM.

@LHC folks: no CLs used



	Chance to exclude ...	
	No dark matter	Hypothesis true
... A	7%	5%
... B	85%	5%



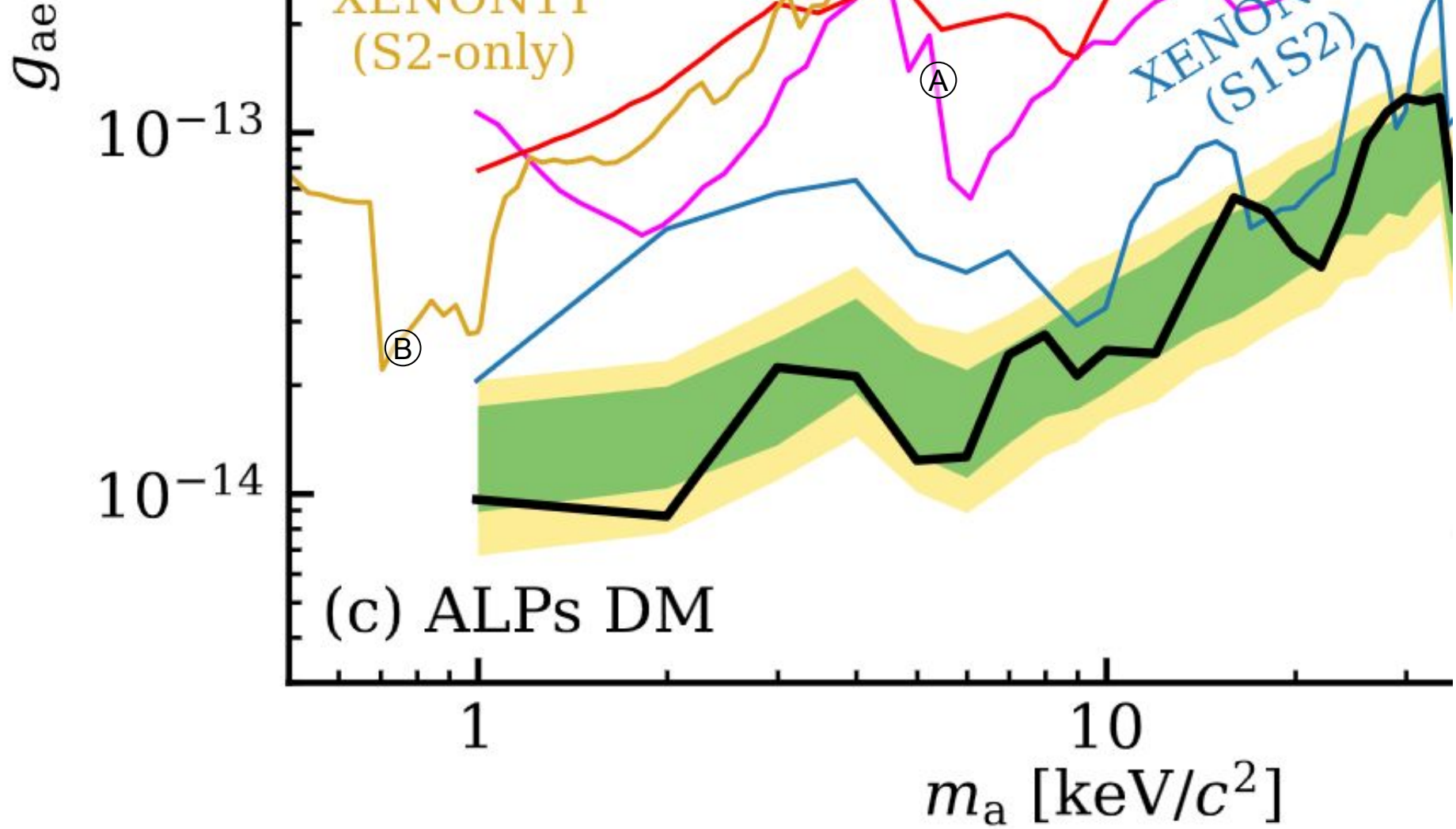
	Chance to exclude ...	
	No dark matter	Hypothesis true
... A	7%	5%
... B	85%	5%

XENON stops at blue

LZ stops at red

LHC does something else (CLs)

Statistics wizards, we'd like to talk with you



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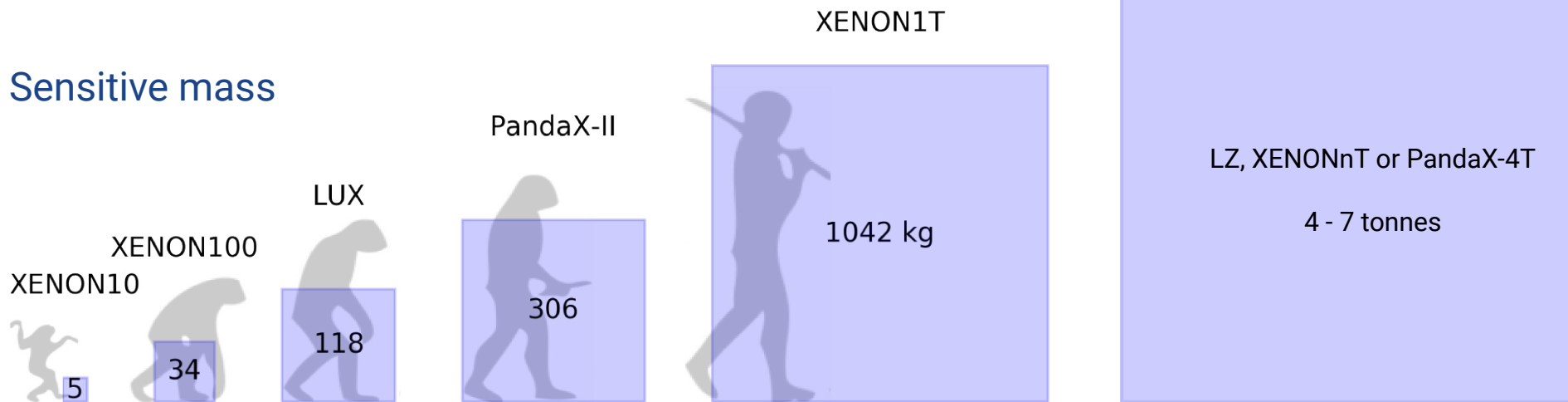
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 Nikhef

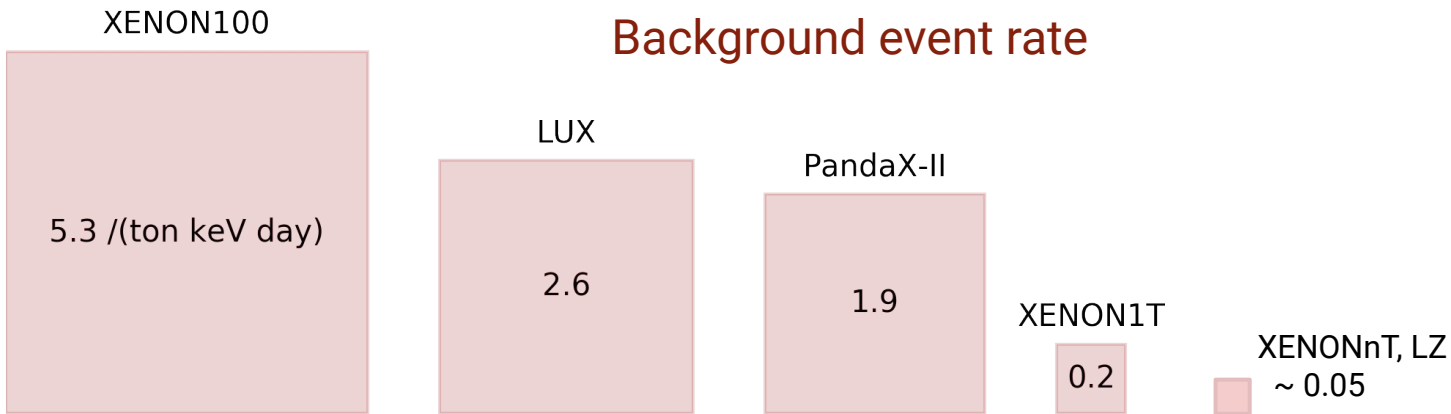


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Sensitive mass



Background event rate



Particle dark matter models

