

# Activities of the local XENON - DARWIN - XLZD group

Riccardo Biondi



XENON



UNIVERSITÀ  
DEGLI STUDI  
DELL'AQUILA



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# The Collaboration(s)



## XENON Collaboration:

- 29 Institutions Worldwide
- More than 200 Scientists



**Main goal:** Detection of dark matter particles with a liquid xenon TPC and much more..

## DARWIN collaboration:

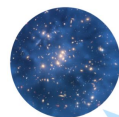
- R&D on next generation dual-phase TPC
- More than 200 members from 35 institutions

## XLZD Collaboration: XENON-LZ-DARWIN:

- Merging to strengthen knowledge and resources
- More than 350 members from 60 institutions

### Dark Matter

WIMPs  
Sub-GeV  
Inelastic  
Axion-like particles  
Planck mass  
Dark photons



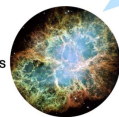
### Neutrino nature

Neutrinoless double  
beta decay  
Neutrino magnetic  
moment  
Double electron  
capture



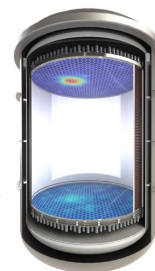
### Supernovae

Early alert  
Supernova neutrinos  
Multi-messenger  
astrophysics



### Sun

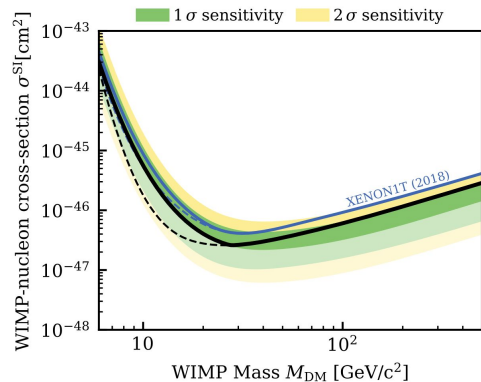
pp neutrinos  
Solar metallicity  
 ${}^7\text{Be}$ ,  ${}^8\text{B}$ , hep



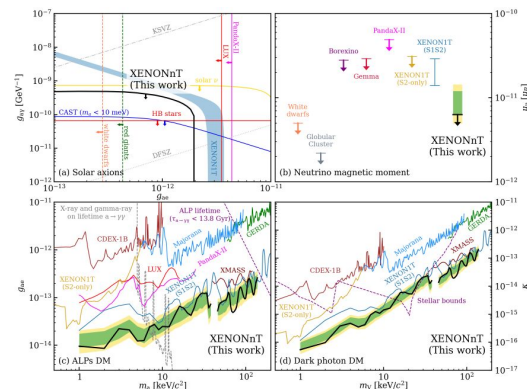
# Latest Results



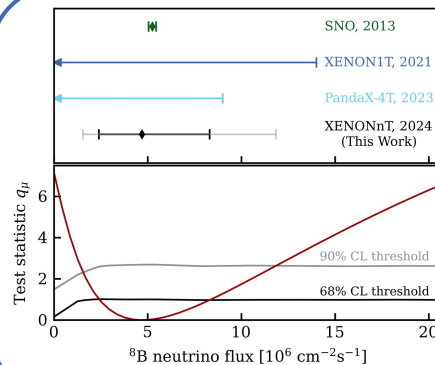
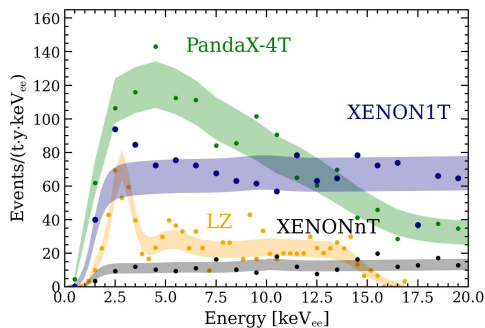
Limit on WIMP direct search:



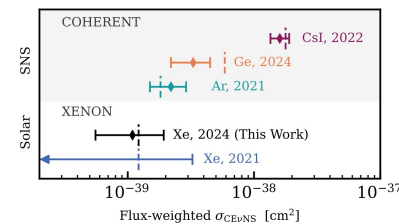
Limits on new physics:



Lower ER background in the field:



First contact with the neutrino floor:

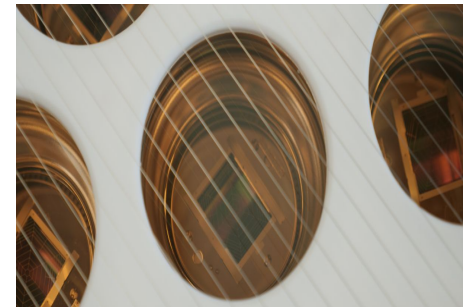


# Local activities



- Analysis:
  - WIMP analysis
  - New physics channels
  - Detector response modelling
  - Machine Learning
- R&D towards next generation:
  - New electrodes
  - Photosensor
  - Wavelength shifter
- On site detector activities:
  - Calibration
  - Cryogenic operations
  - Background reduction

Joining the local XENON group you will have the chance to have a complete training on experimental physics, going from bare hands activities to high level analysis



# Contacts







If you are interest or you have questions or curiosities you can contact me writing at:

[riccardo.biondi@lngs.infn.it](mailto:riccardo.biondi@lngs.infn.it)

Or you can try to find me in my new office in the ex-inps building ( I still don't know precisely where)



Online resources:

-  [Xenonexperiment.org](http://Xenonexperiment.org)
-  [Xenon\\_experiment](https://www.instagram.com/Xenon_experiment)
-  [XENONexperiment](https://twitter.com/XENONexperiment)
-  [XENONexperiment](https://www.facebook.com/XENONexperiment)

