



ET collaboration

OSB Div 3: Populations

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ET monthly meeting, March 7th 2023

Division goals:

Develop the ET science case about

- populations of astrophysical origin,
- primordial black holes,
- stochastic backgrounds of astrophysical origin

Wikipage: <https://wiki.et-gw.eu/OSB/PopulationStudies/>

Telecons:

On the 2nd Tuesday of each month (~ 30 attendees)

Next telecon: March 14 2023, 2PM CET,

zoom link: <https://unipd.zoom.us/j/81366039001?pwd=RIUzUHIKZXdlZmc0OFp4cEdSZ0lDUT09>

Each meeting consists in:

- Updates from the division and the OSB
- 1 – 2 short talks

Encourage presentations from early-career scientists

→ please contact us if you want to present your results

Telecons:

Previous talks:

Valerio De Luca, *Primordial black holes*

Irina Dvorkin, *Stochastic gravitational-wave backgrounds from astrophysical sources*

Gabriele Franciolini, *Searching for Primordial Black holes with the Einstein Telescope*

Carole Périgois, *Astrophysical backgrounds with different configurations*

Tania Regimbau, *Discussion on tools and ongoing work from Division 10*

Neha Singh, *Exploring compact binary populations with the Einstein Telescope*

Next speaker (March 14):

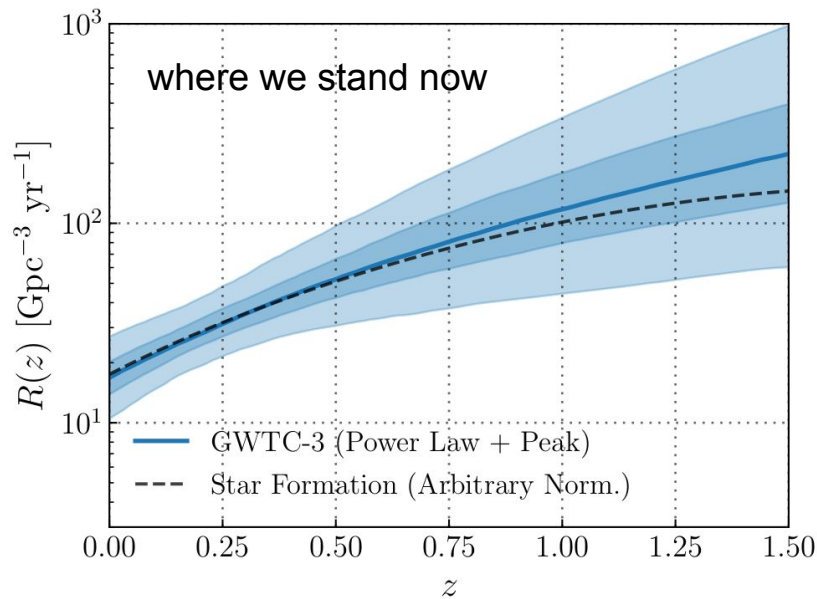
Ulyana Dupletsa, *Presentation on GWfish*

Blue book: Bottom-up approach → add material to the wiki

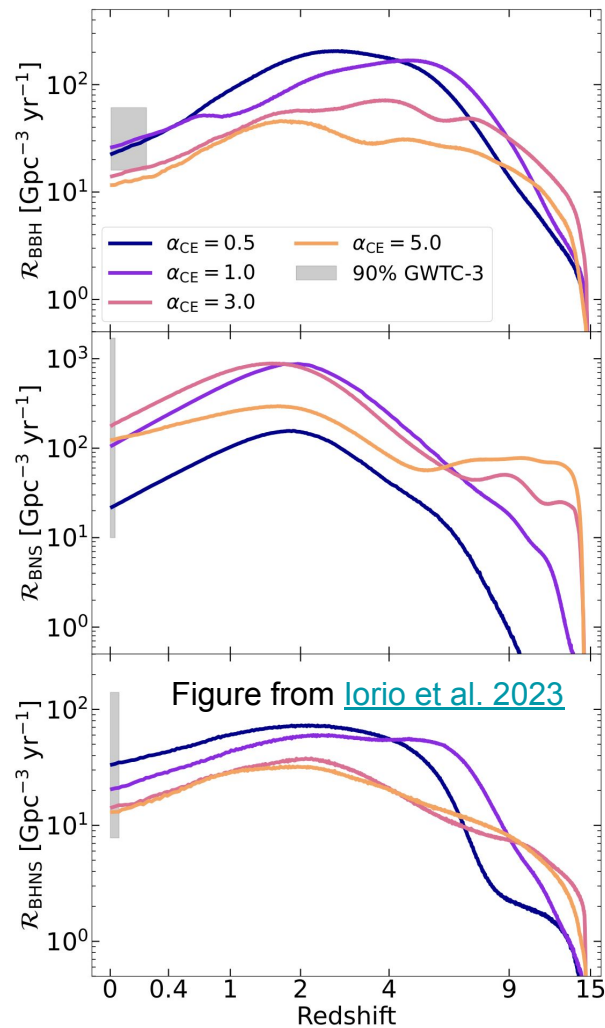
1. [Merger rate density of compact objects across the cosmic time](#)
2. [Distinguish primordial and stellar-origin black holes \(BHs\)](#)
3. [Map Population III stars and cosmic reionization with Population III BHs](#)
4. [Constrain mass spectrum of neutron stars \(NSs\)](#)
5. [Constrain mass spectrum of BHs and its possible evolution with redshift](#)
6. [Lower and upper mass gap](#)
7. [Intermediate-mass BHs \(IMBHs\): Formation channels and merger rate](#)
8. [BH/NS spin evolution with redshift](#)
9. [BBHs as standard candles](#)
10. [Electromagnetic counterparts of binary compact objects](#)
11. [Host galaxies of binary compact objects](#)
12. [Multiband observations](#)
13. [Systematic inclusion of selection effects in population studies](#)
14. [Exploration of complementarity background-approach and catalogue-approach](#)
15. [Background subtraction](#)
16. [Reconstruction of background spectral shape](#)
17. [Background detection algorithms](#)

Blue book:

Merger rate density of compact objects across the cosmic time



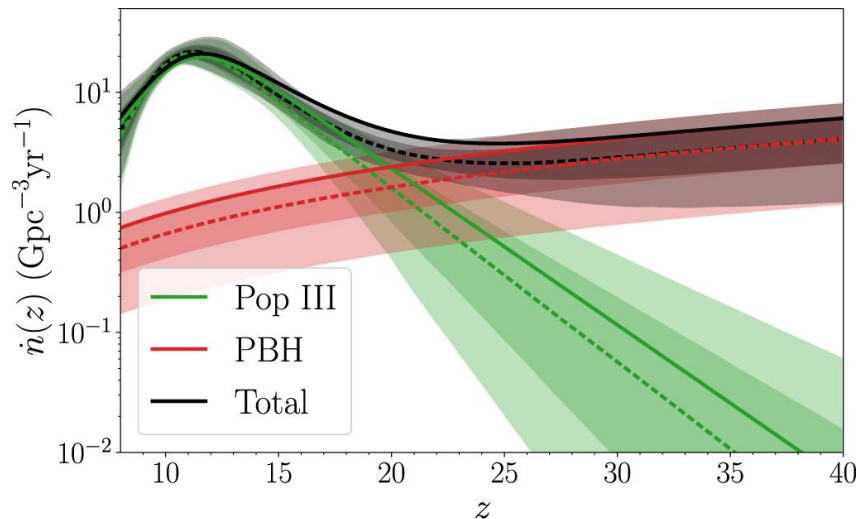
[Abbott et al. 2023](#)



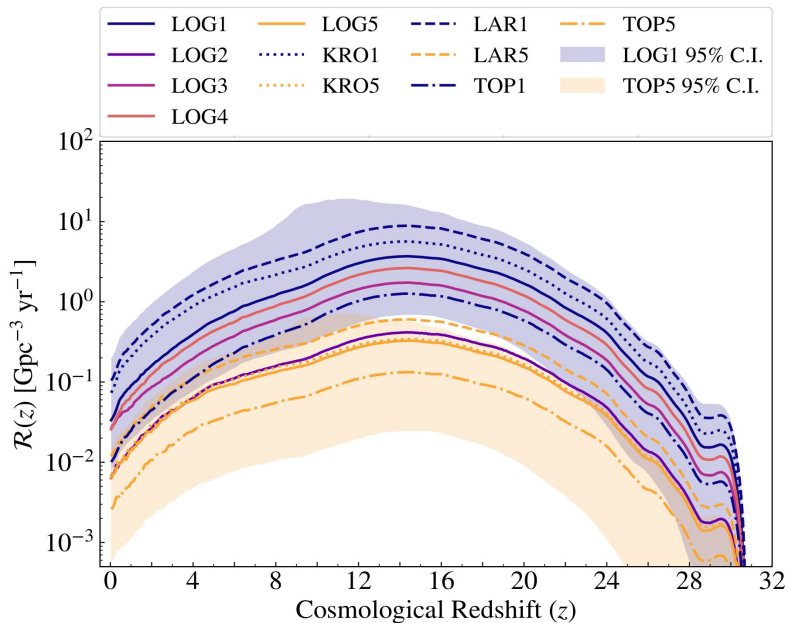
Blue book:

Distinguish primordial and stellar-origin BHs

Map Population III stars and cosmic reionization with Population III BHs



[Ng et al. 2022](#)

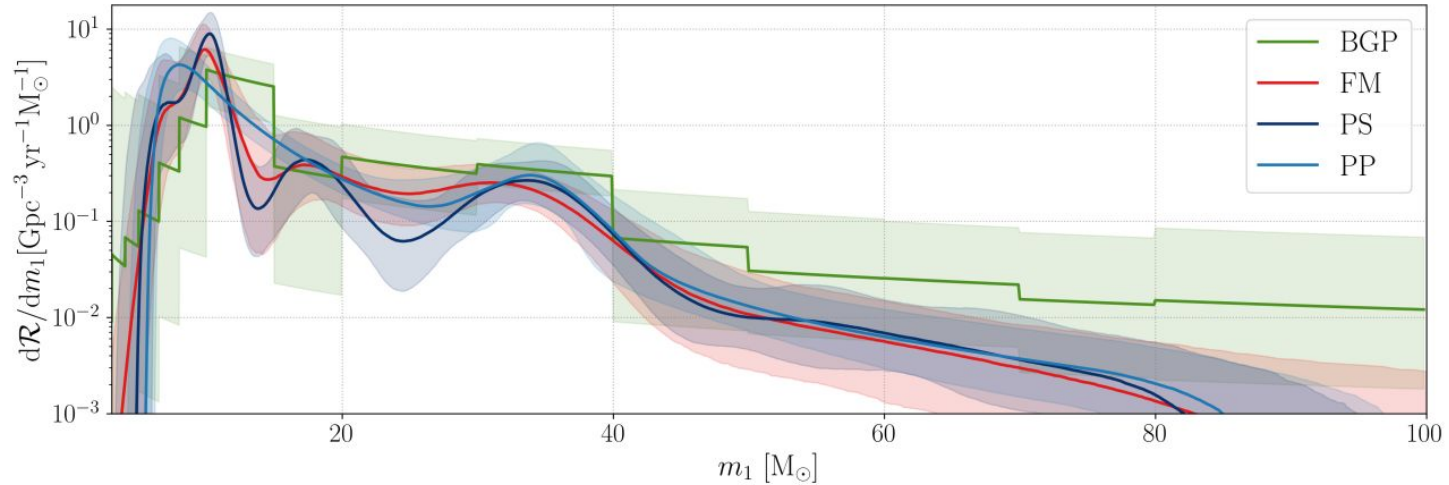


Santoliquido et al. 2023, in prep.

Blue book:

Constrain mass spectrum of NSs

Constrain mass spectrum of BHs and its possible evolution with redshift

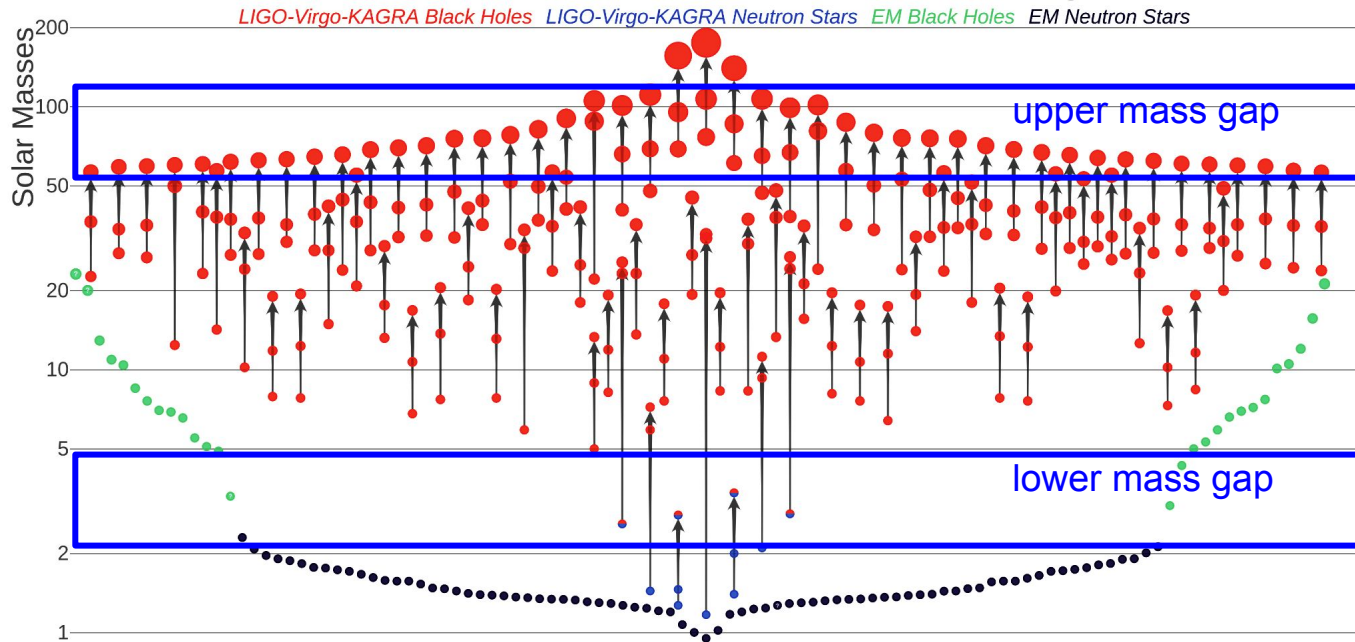


Abbott et al. 2023

Blue book:

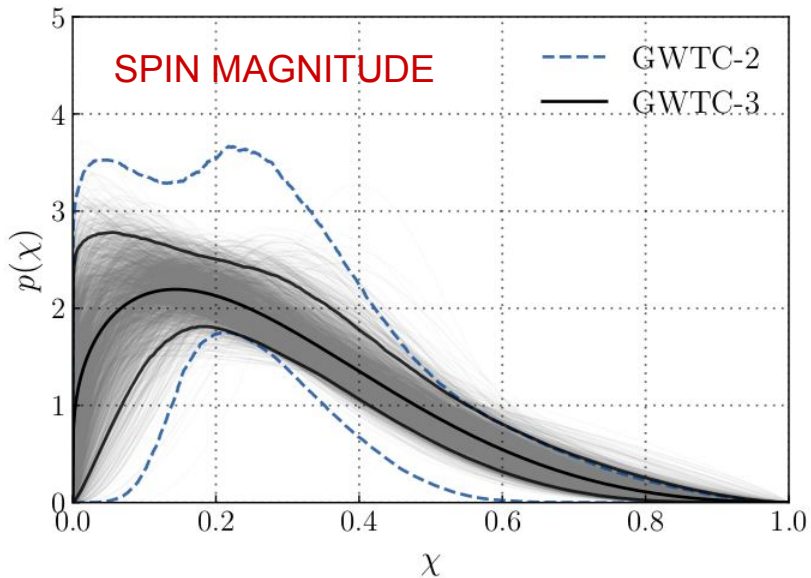
Lower and upper mass gap

Masses in the Stellar Graveyard

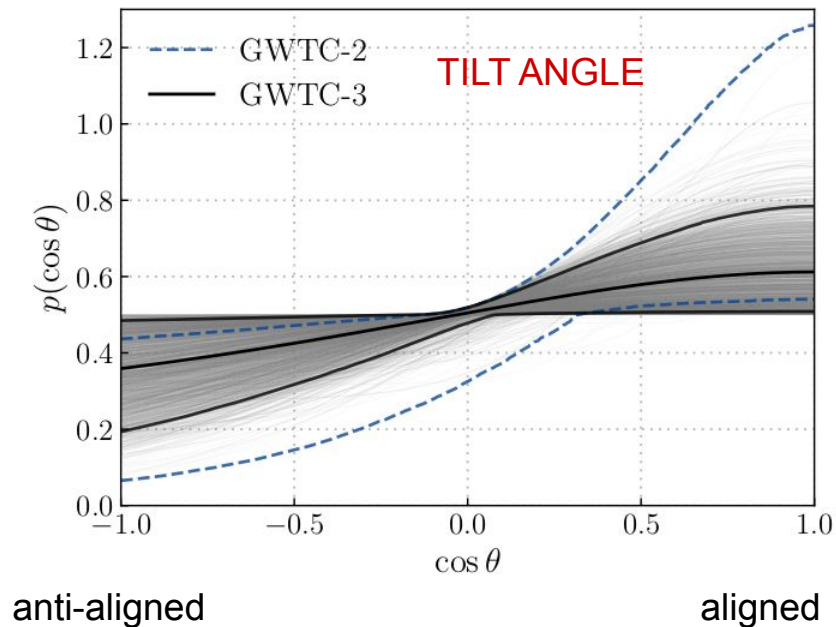


Blue book:

BH/NS spin evolution with redshift



[Abbott et al. 2023](#)



Members and organization:

- 109 members registered to the mailing list
- > 200 people expressed their interest

Missing people, please join a research unit and register to the mailing list

- No sub-division into work packages to have a flexible structure
- We are looking for ET enthusiasts and active Div members

THANK YOU