



i F C A



**EXCELENCIA
MARÍA
DE MAEZTU**

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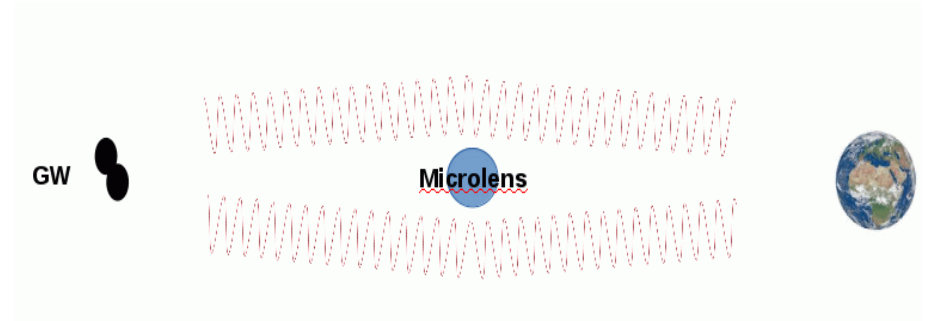
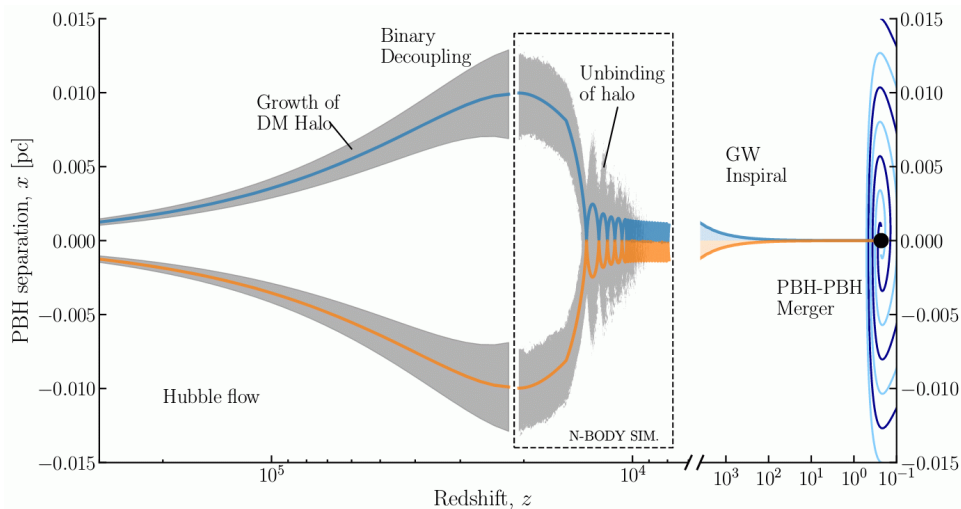
PBH, DM halos and NSs

Pratibha Jangra

PBH and DM halos

Jose M. Diego

Gravitational Lensing

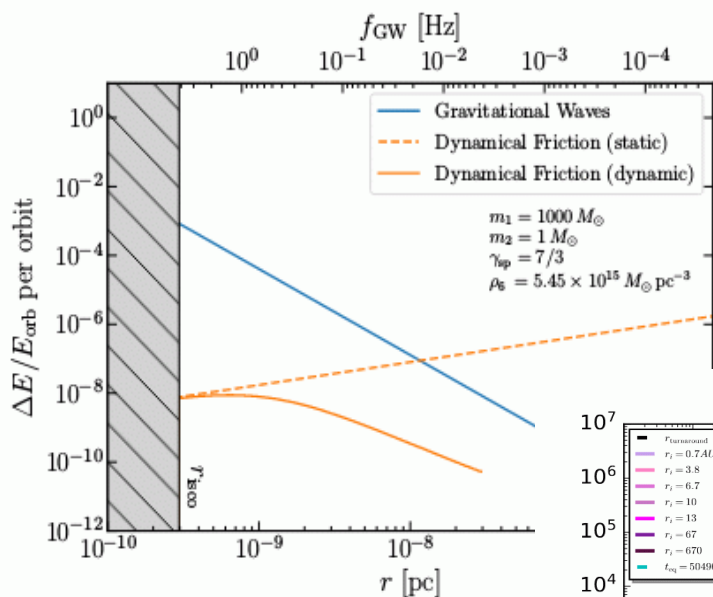


PBH and DM halos around PBH

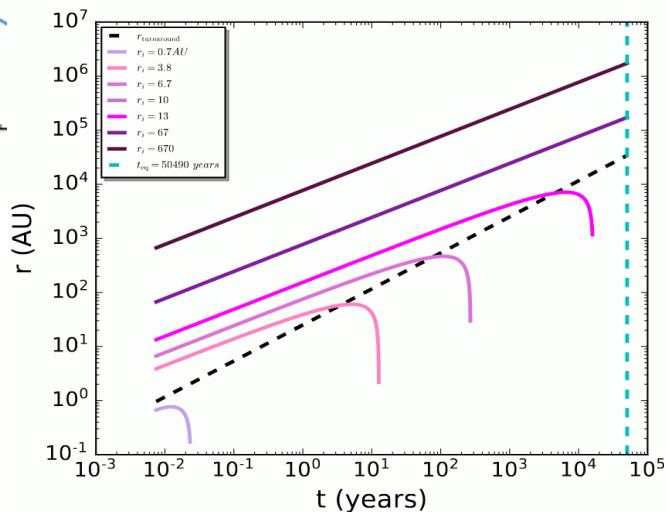
DM halos around BH (including PBH) have an impact on the evolution of binaries.

ET can constrain the population of PBH at low-z, but also at high-z

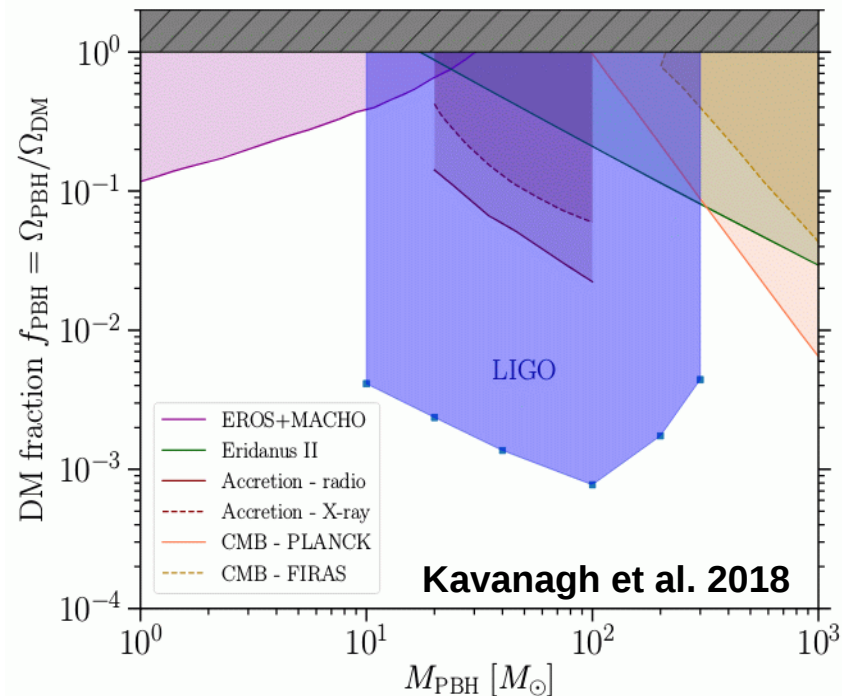
DM inside NS & Equation of State



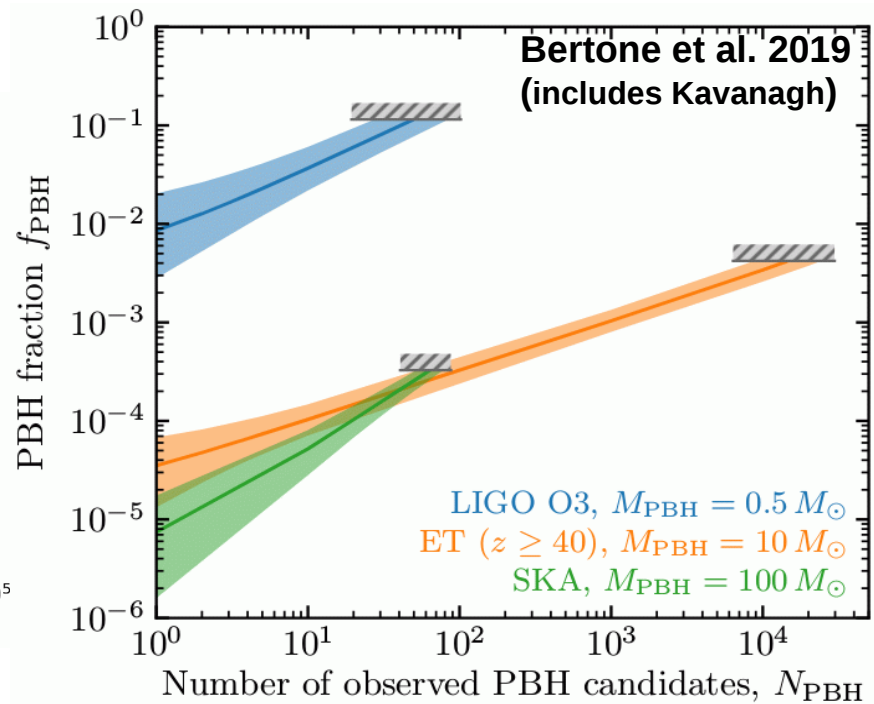
Coogan et al. 2021 (includes Kavanagh)



Pratibha Jangra in prep.

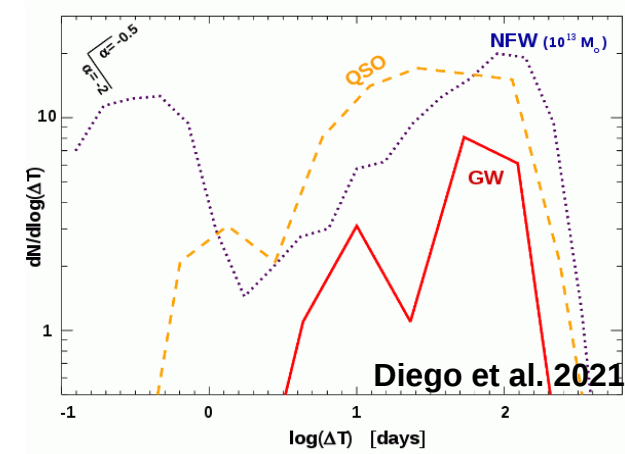
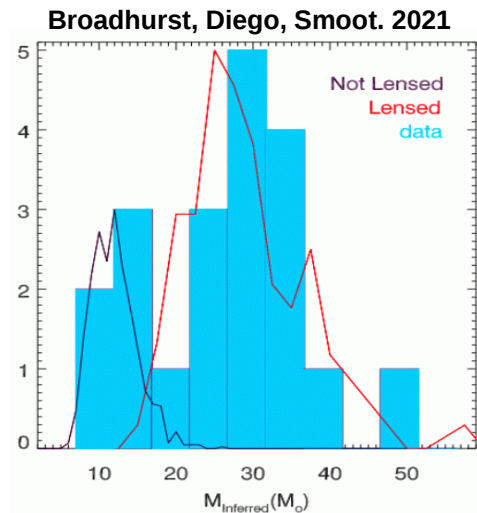
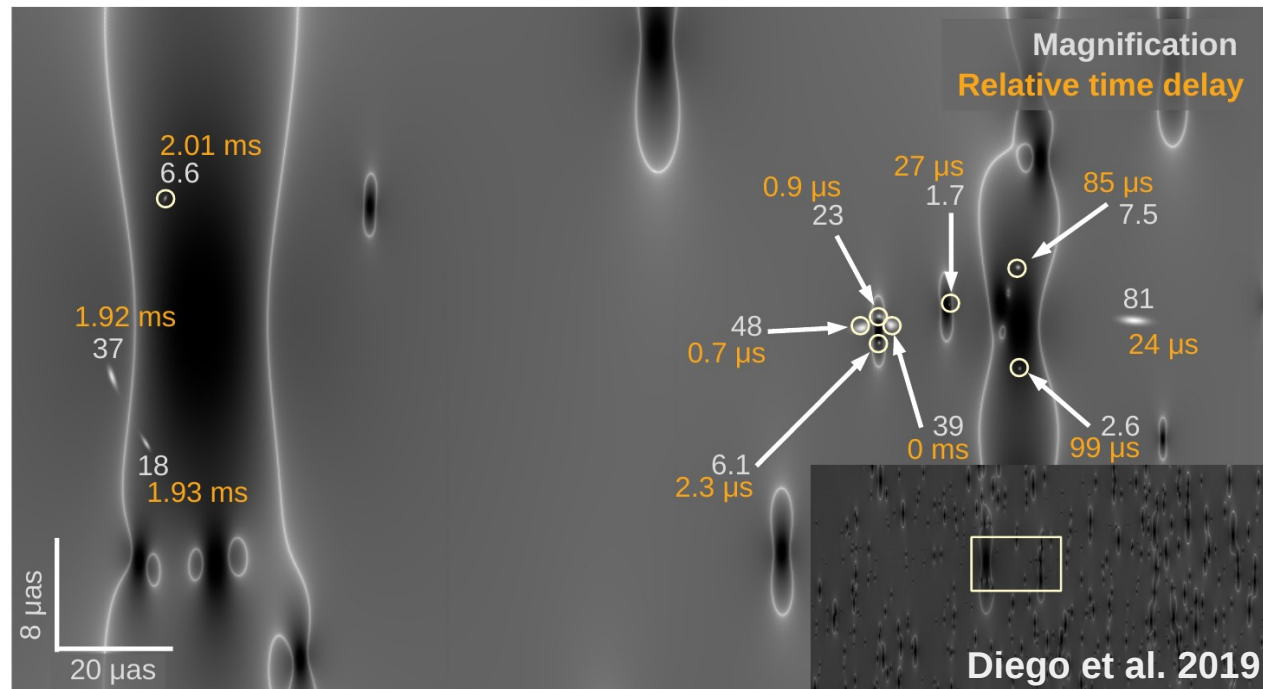


Kavanagh et al. 2018



Bertone et al. 2019 (includes Kavanagh)

GW and Lensing

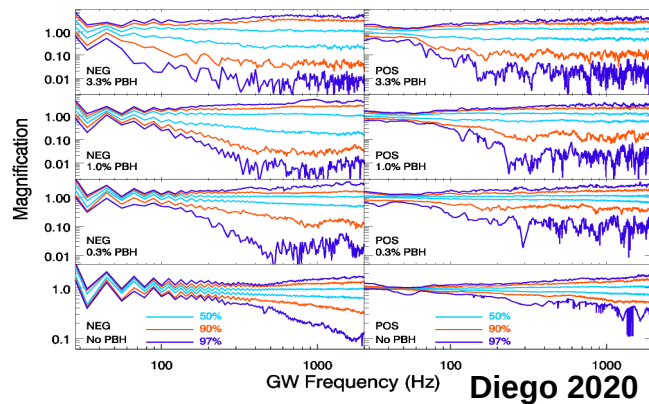


Interference of GWs

GWs sensitive to microlensing by 5-50 M_{\odot} compact objects

Useful to constrain DM but also stellar populations or other types of BHs

Effect is stringer at larger frequencies (>300 Hz), but still need lower frequencies (<20 Hz) to recognize the effect → ET is ideal



Lensing by halos of GWs

GWs can be lensed by haloes up to much larger magnifications than galaxies.

Explains observations.

- Multiple peaks in the mass function
- Mass gap events
- Tight correlation between m_1 and m_2
- Time delays