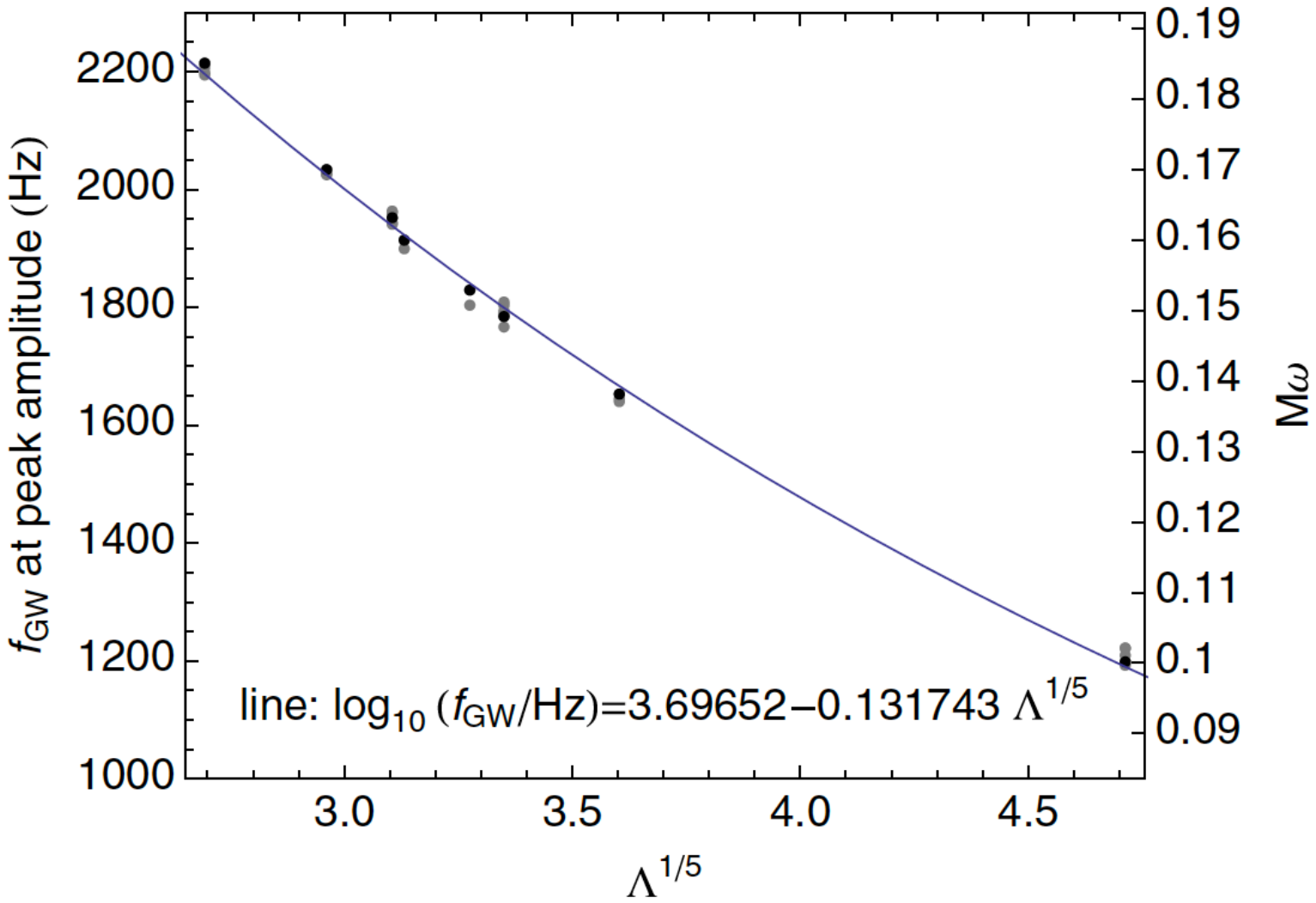
An Update on Universal Relations

08/07/19

Read et. al.

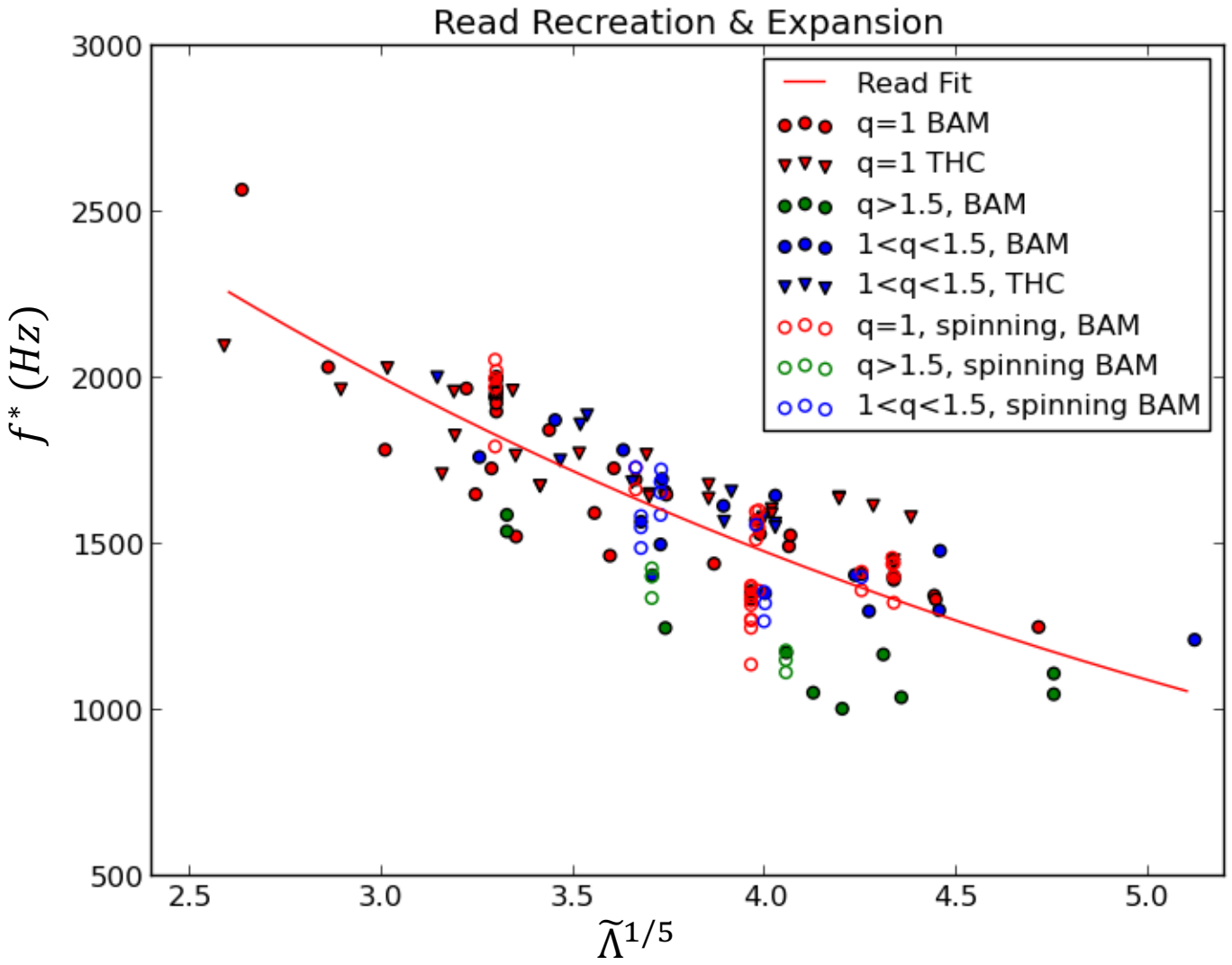
arXiv:1306.4065v1

- Relation between frequency at peak amplitude (f_*) and dimensionless tidal deformability, Λ
- Equal mass, non-spinning NS mergers



Our Update: Read et. al.

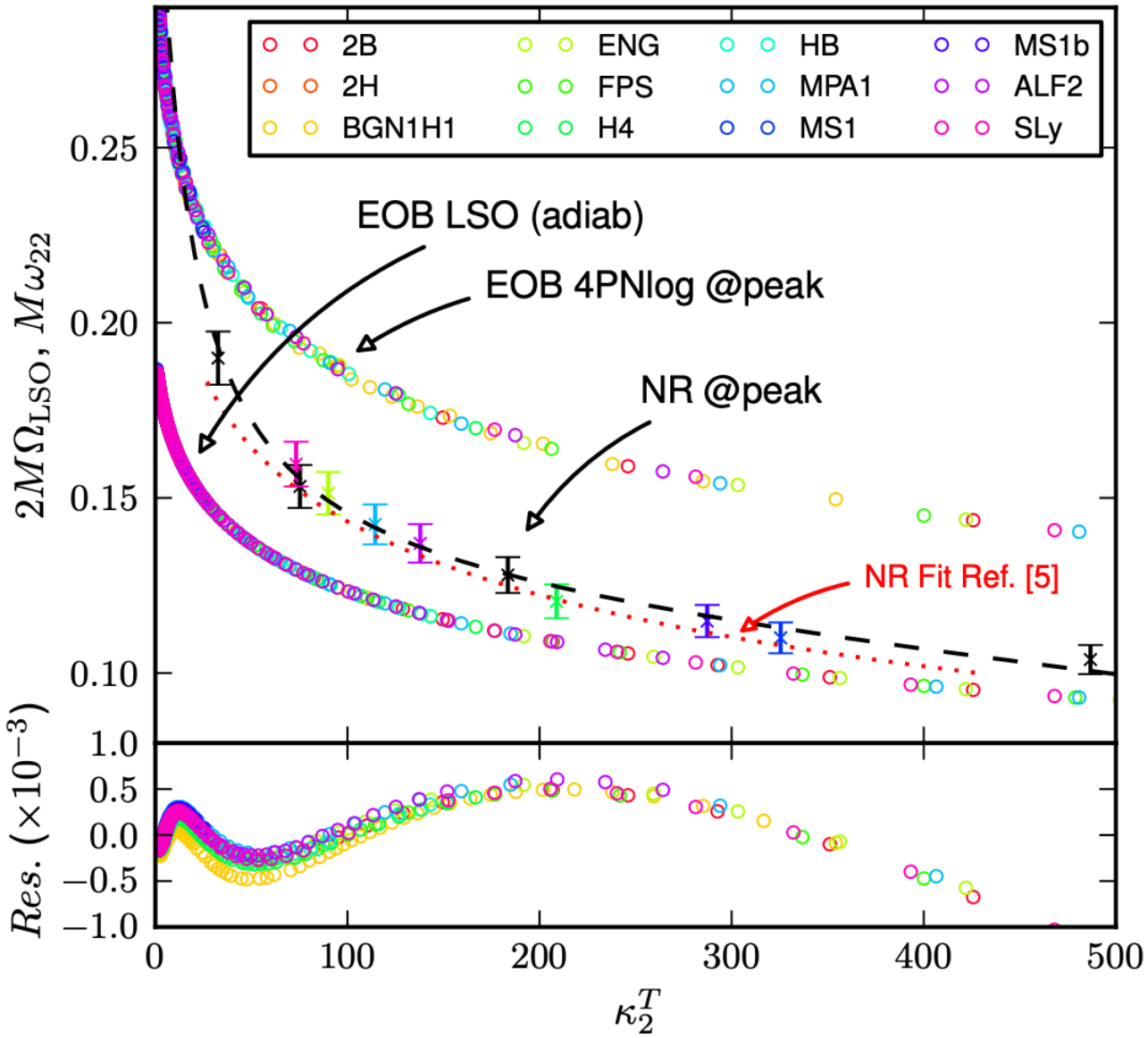
- Relation between frequency at peak amplitude (f_*) and dimensionless tidal deformability, $\widetilde{\Lambda}$
- Varying mass and spinning NS mergers



Bernuzzi et. al

arXiv:1402.6244v2

- Relation between f_* and tidal coupling constant
- Equal mass, non-spinning NS mergers



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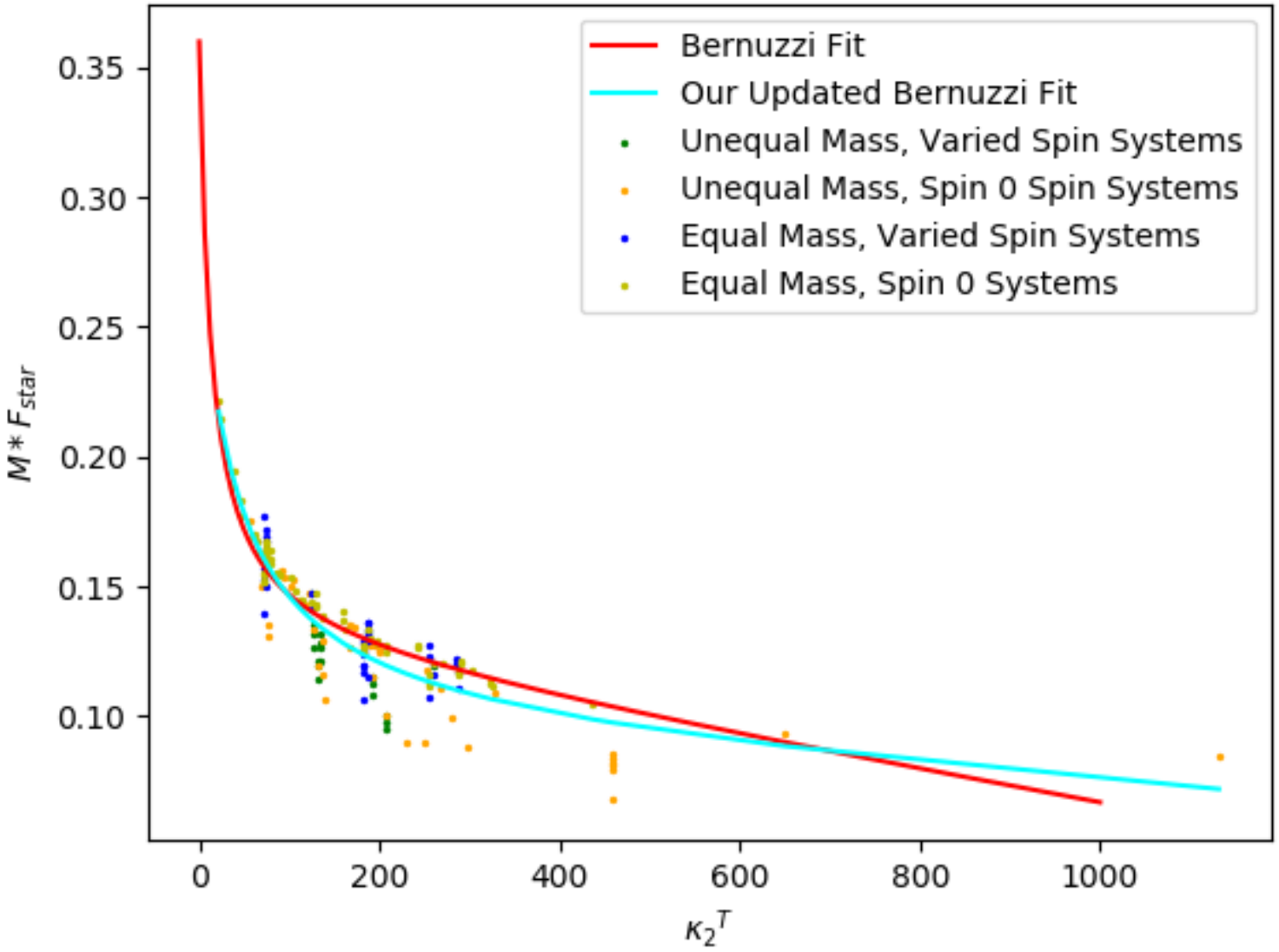
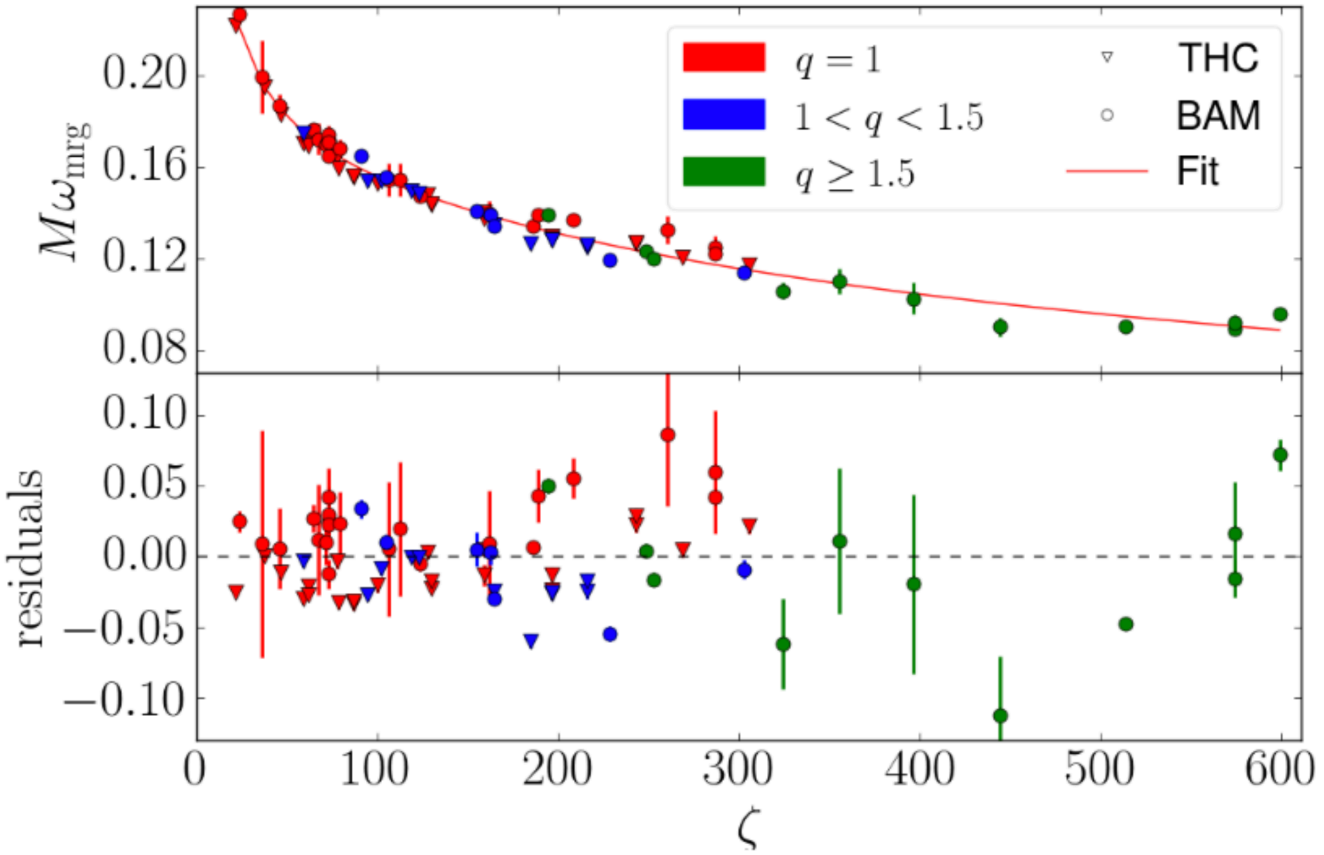


Zappa
2017

- Used available non-spinning CoRe database simulations
- Relation between mass weighted ω_* and ζ

Where:

$$\zeta = \kappa_2^{\mathrm{T}} + \alpha(1 - 4\nu)$$



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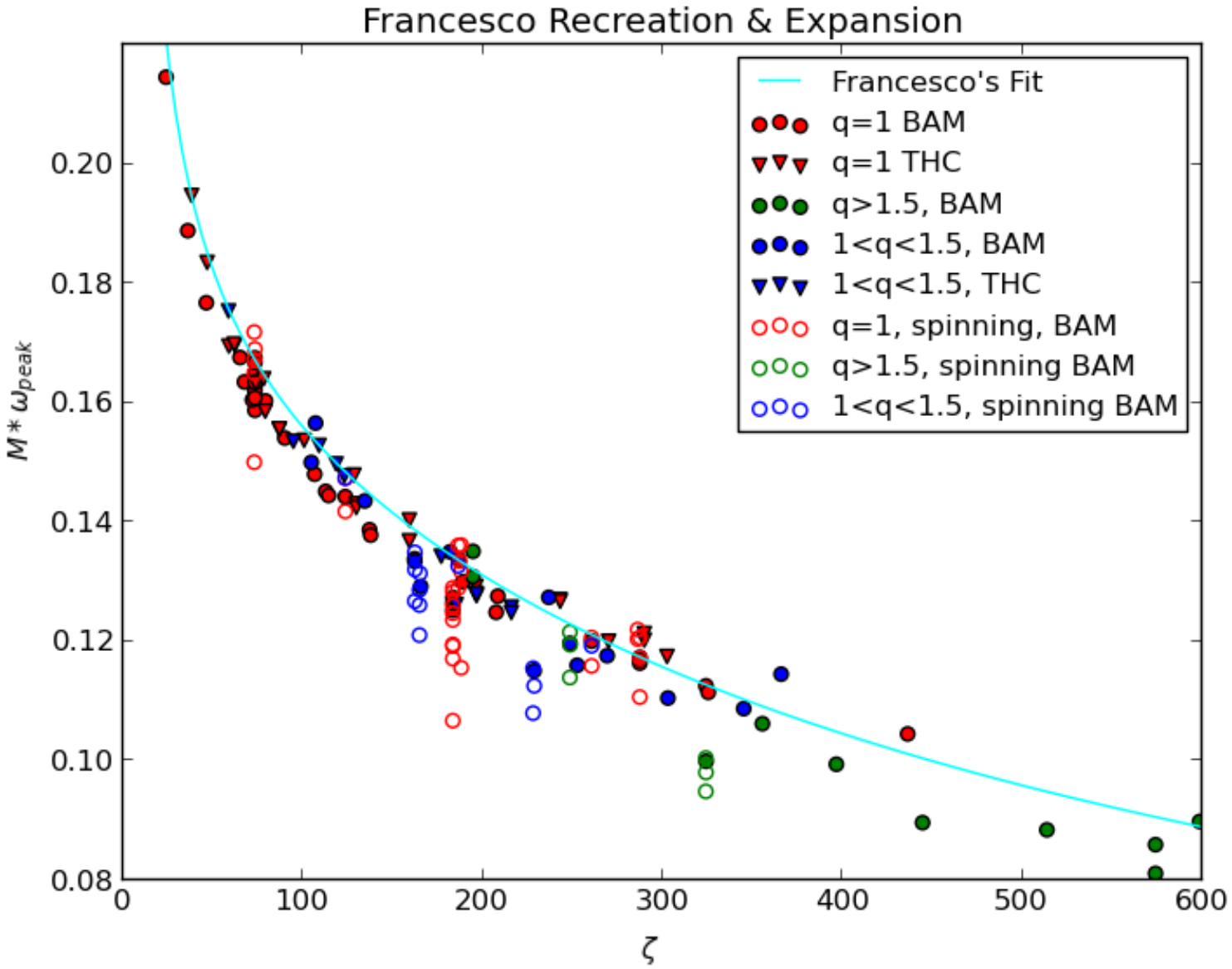

Future Work

- How is measurement of EoS and NR radius affected by the spreads we see in these relations?
- Can these relationships be used in post merger modeling?