

不活性コンパクト連星の探査

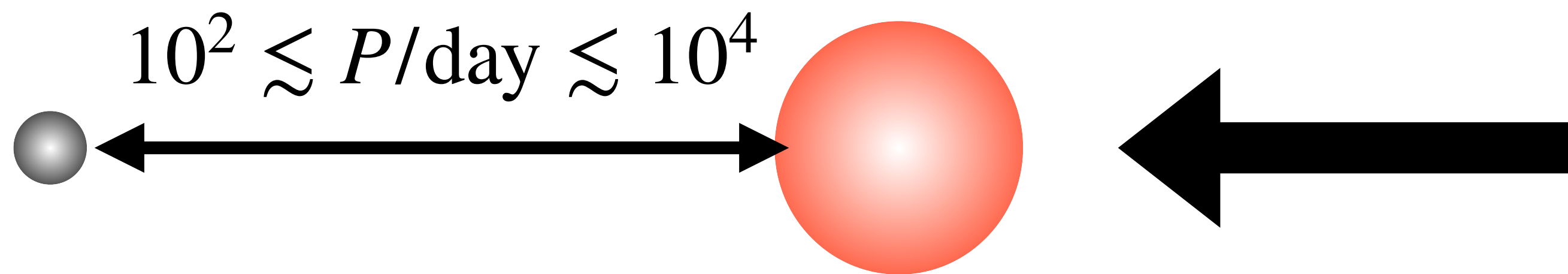
谷川衝（福井県立大学）

2024年度せいめいユーザーズミーティング

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Summary in advance

- 重力波による連星BH/NSの発見によりBH/NS探査が活況
- X線で暗い「不活性」なBH/NS連星 (Gaia BH/NS) がGaia DR3から発見 (e.g. Tanikawa et al. 2023, ApJ, 946, 79)
- なゆたMALLS・せいめいGAOES-RVによりGaia BH/NSを探査中



Seimei GAOES-RV

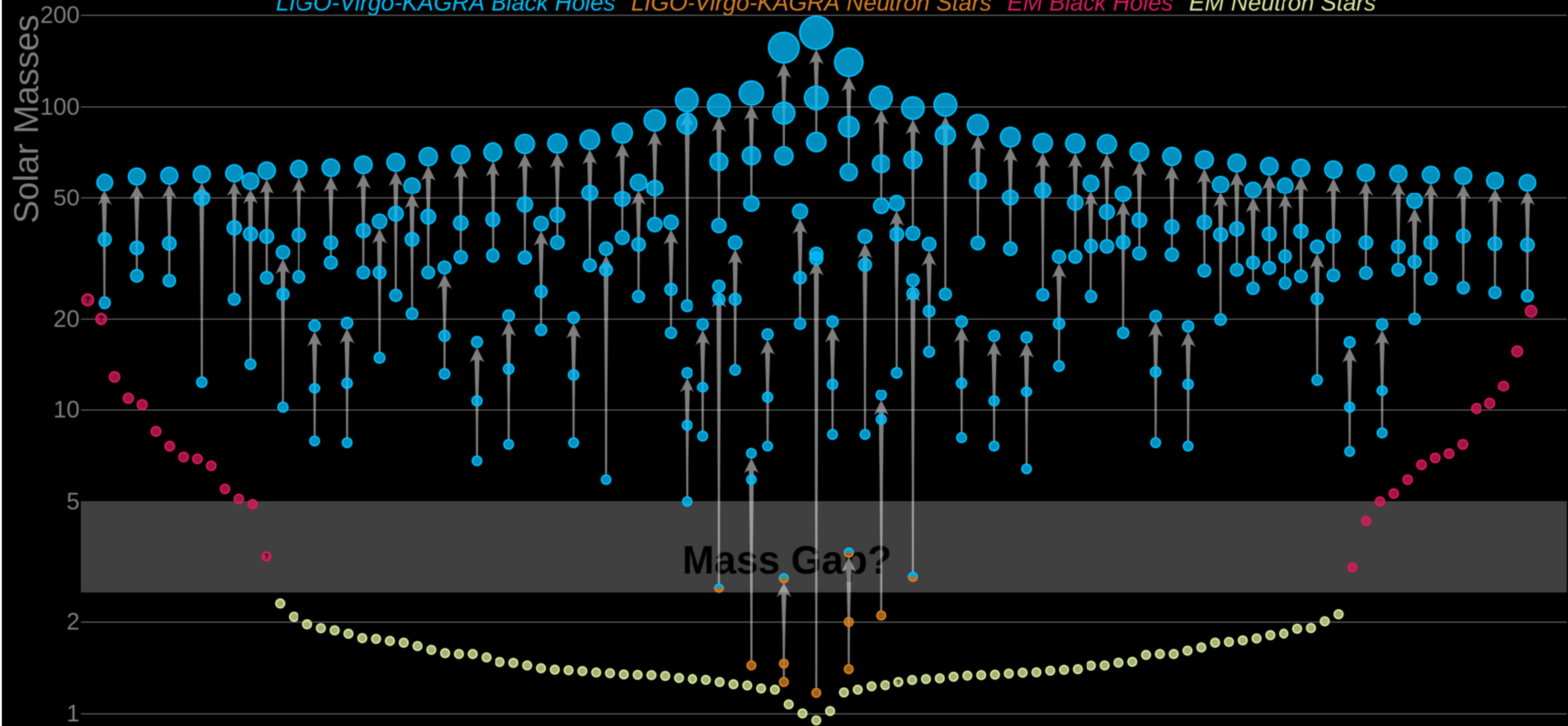


NAYUTA MALLS



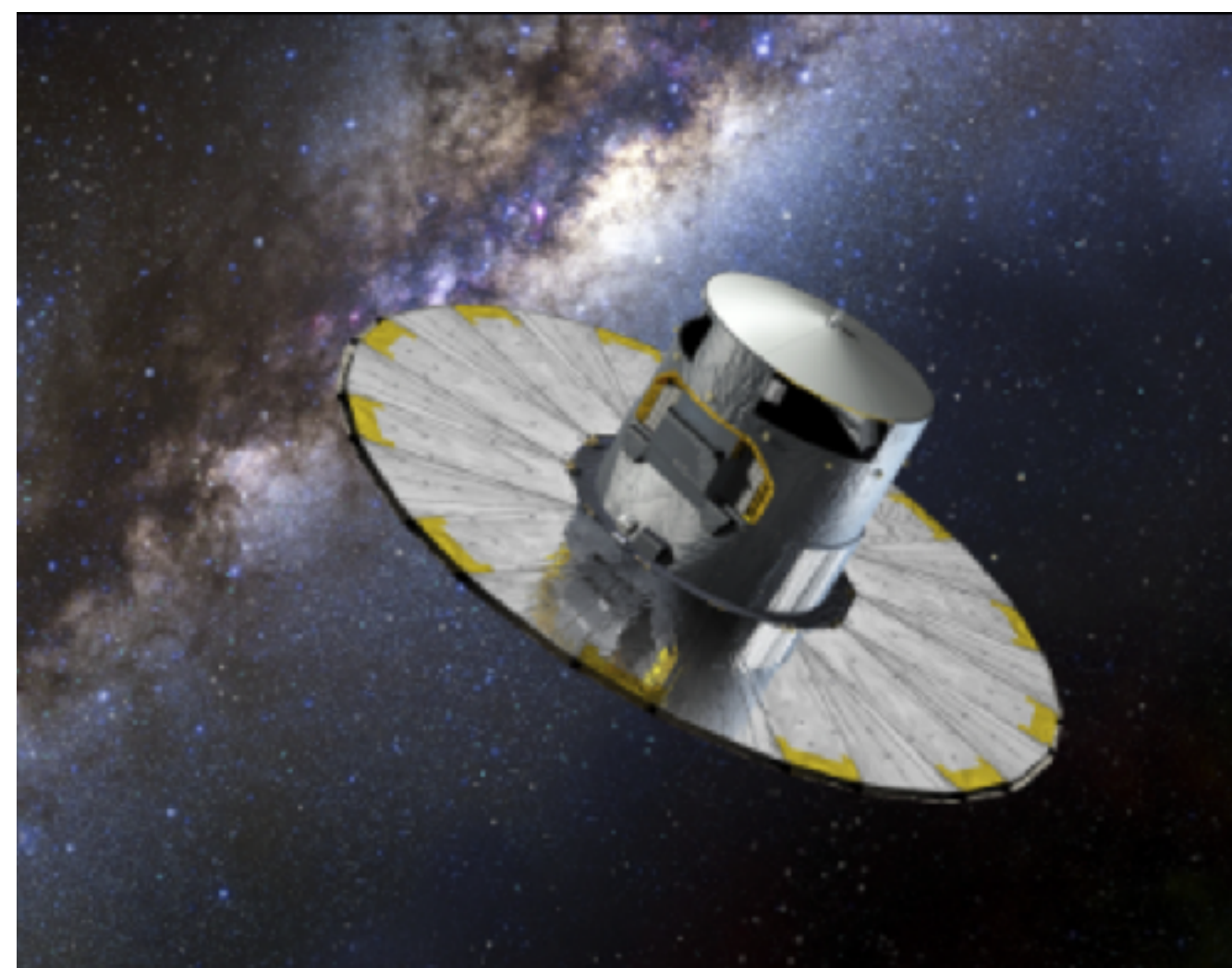
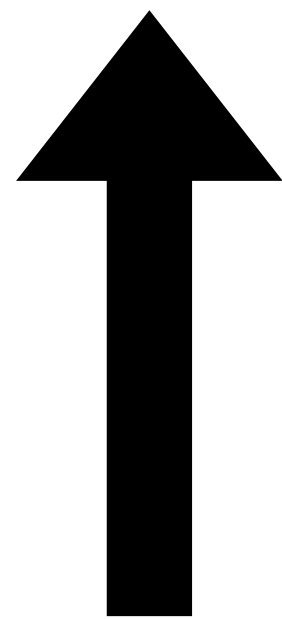
Masses in the Stellar Graveyard

LIGO-Virgo-KAGRA Black Holes *LIGO-Virgo-KAGRA Neutron Stars* *EM Black Holes* *EM Neutron Stars*



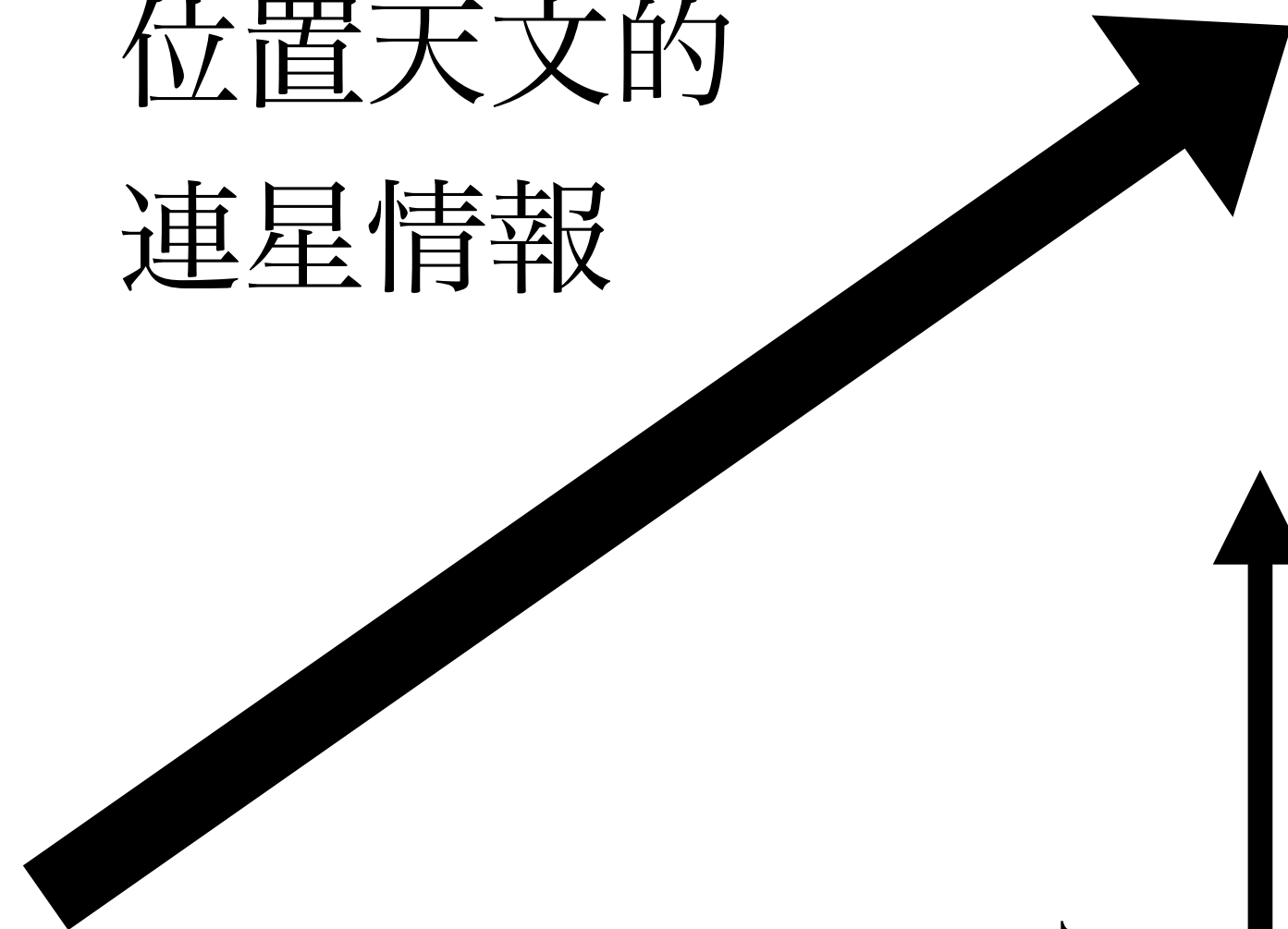


觀測



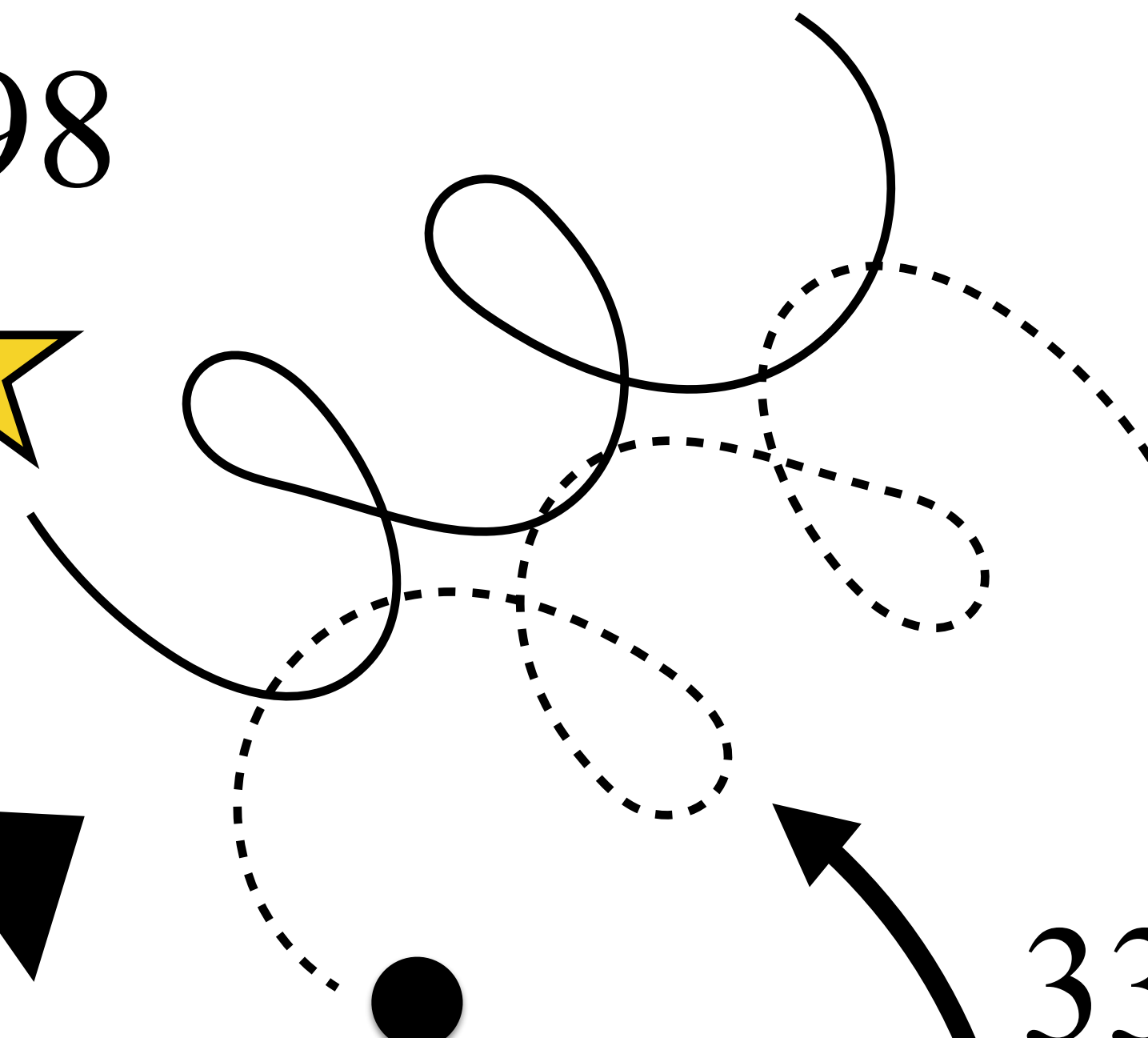
Gaia衛星

位置天文的
連星情報

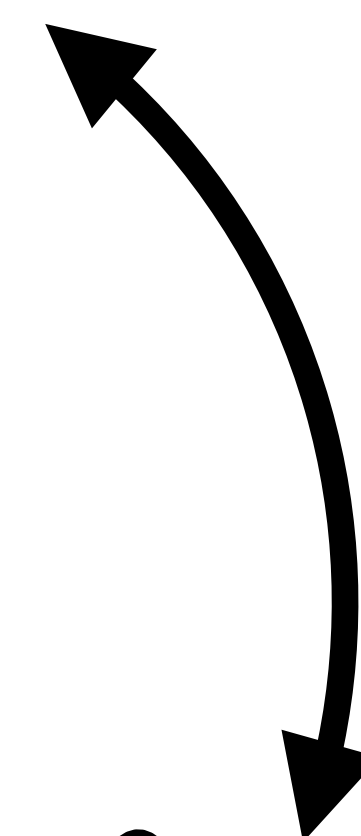


分光的連星
情報

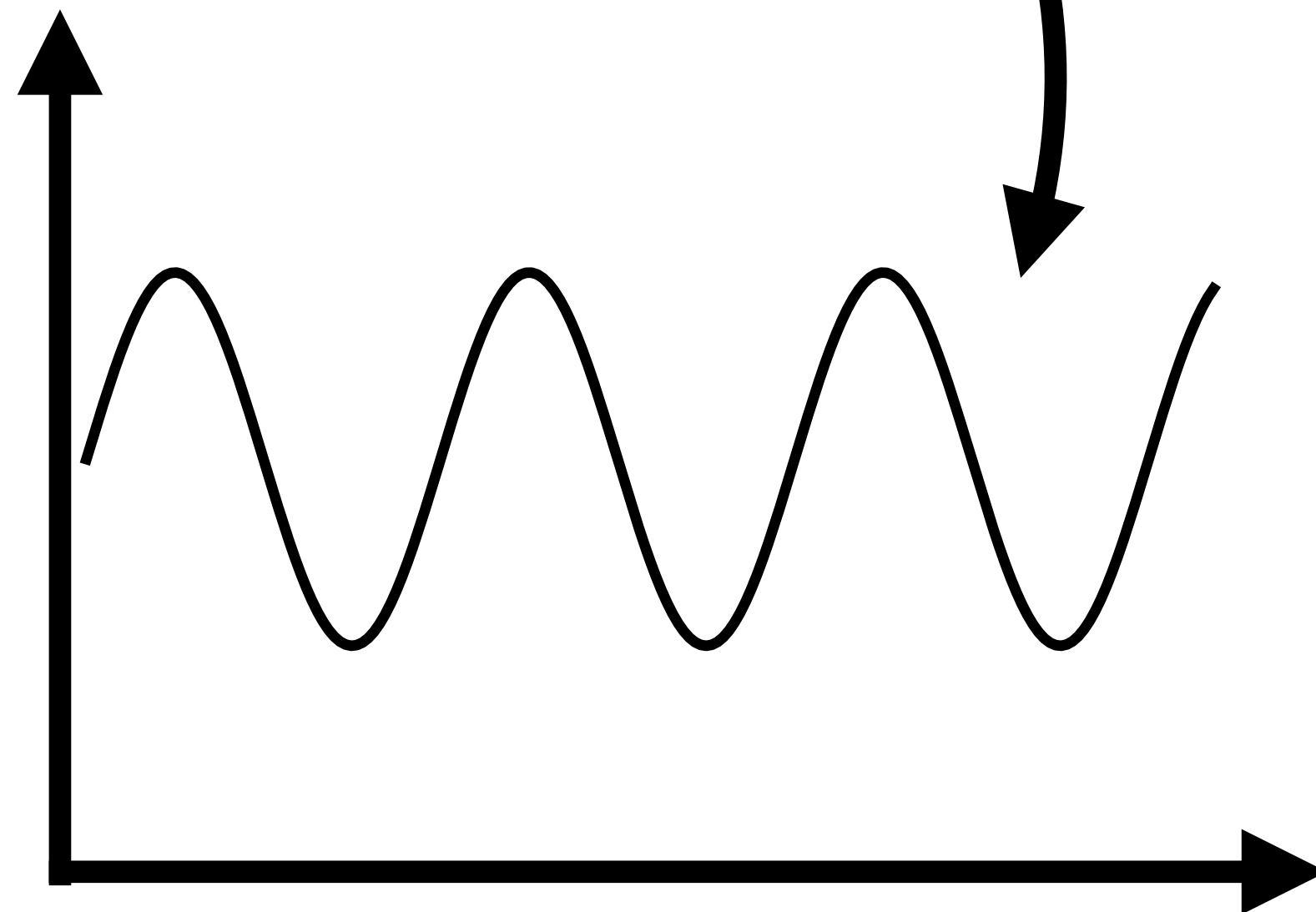
134,598



33,467

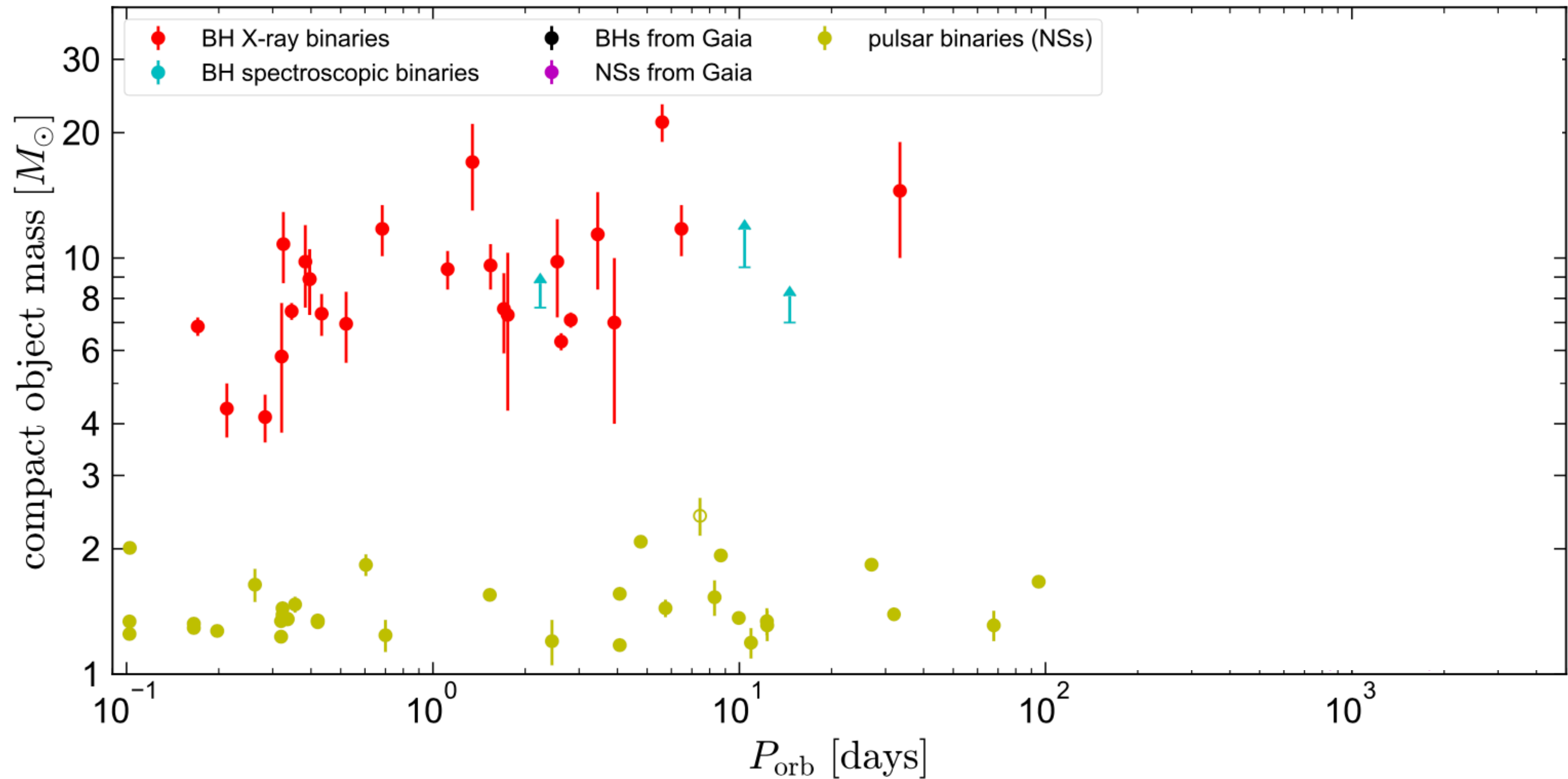


RV

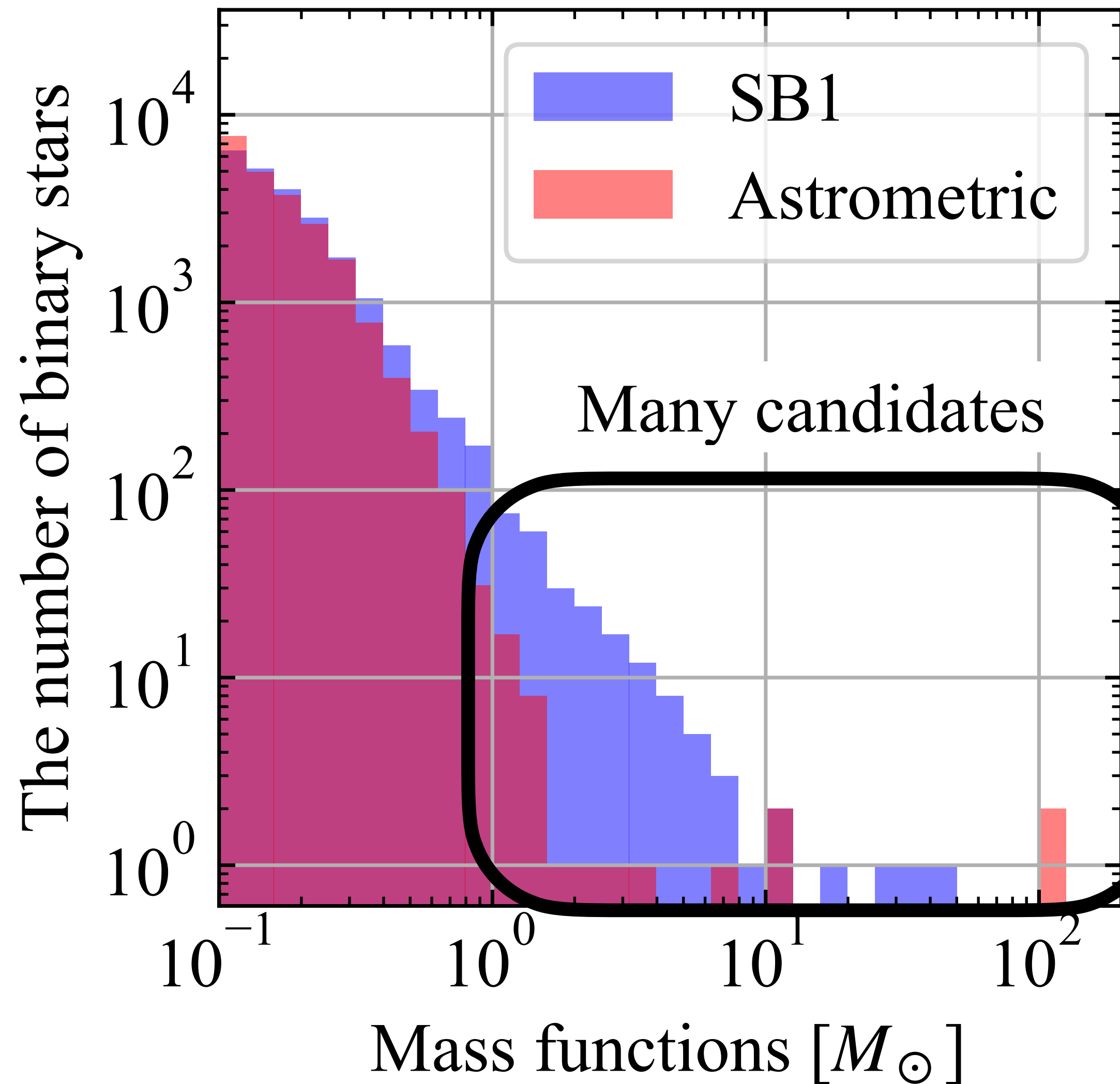


Time 186,905

これまで発見されたコンパクト連星



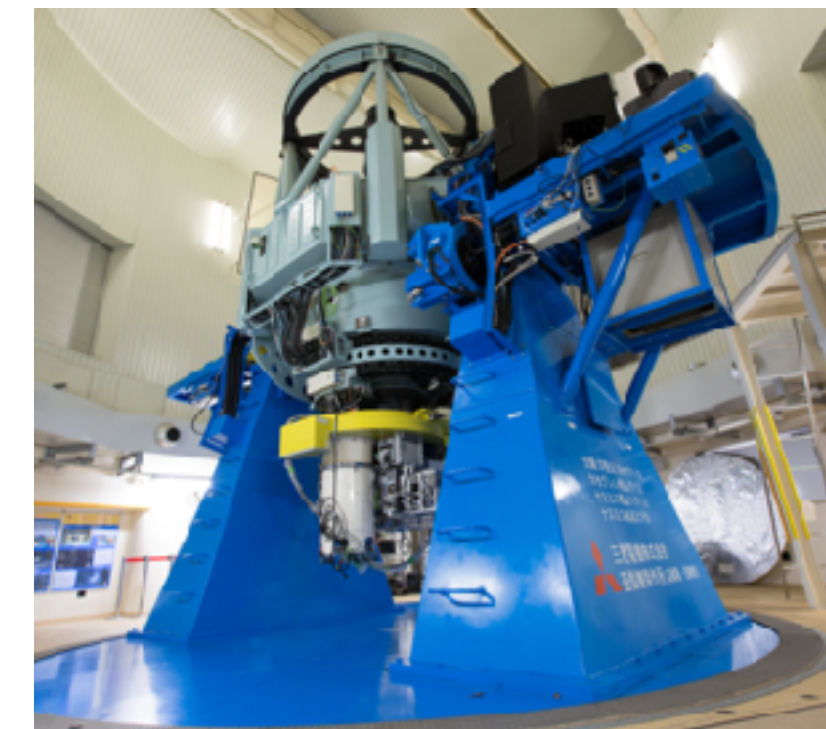
Another Gaia BHs or Gaia NSs



Seimei GAOES-RV

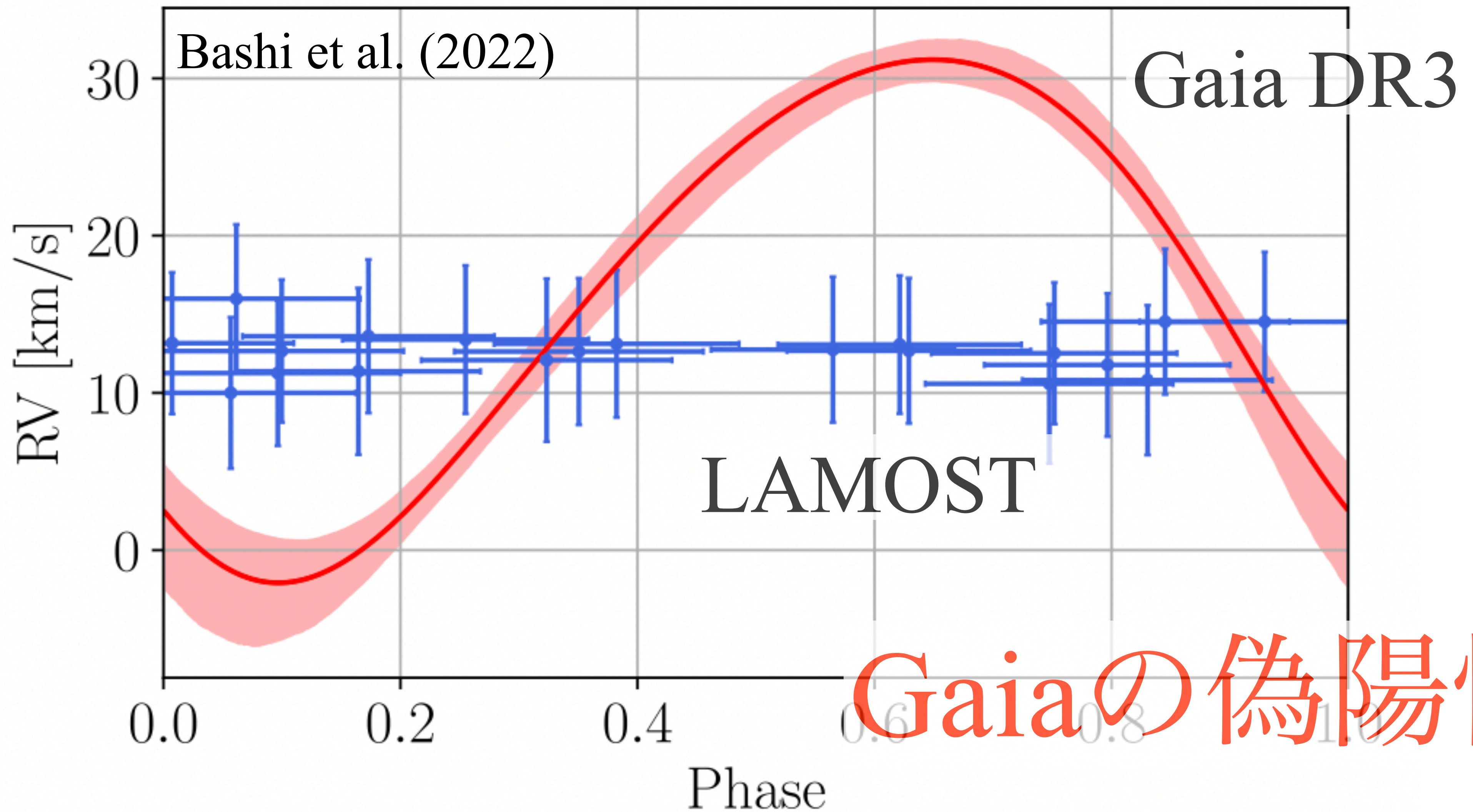


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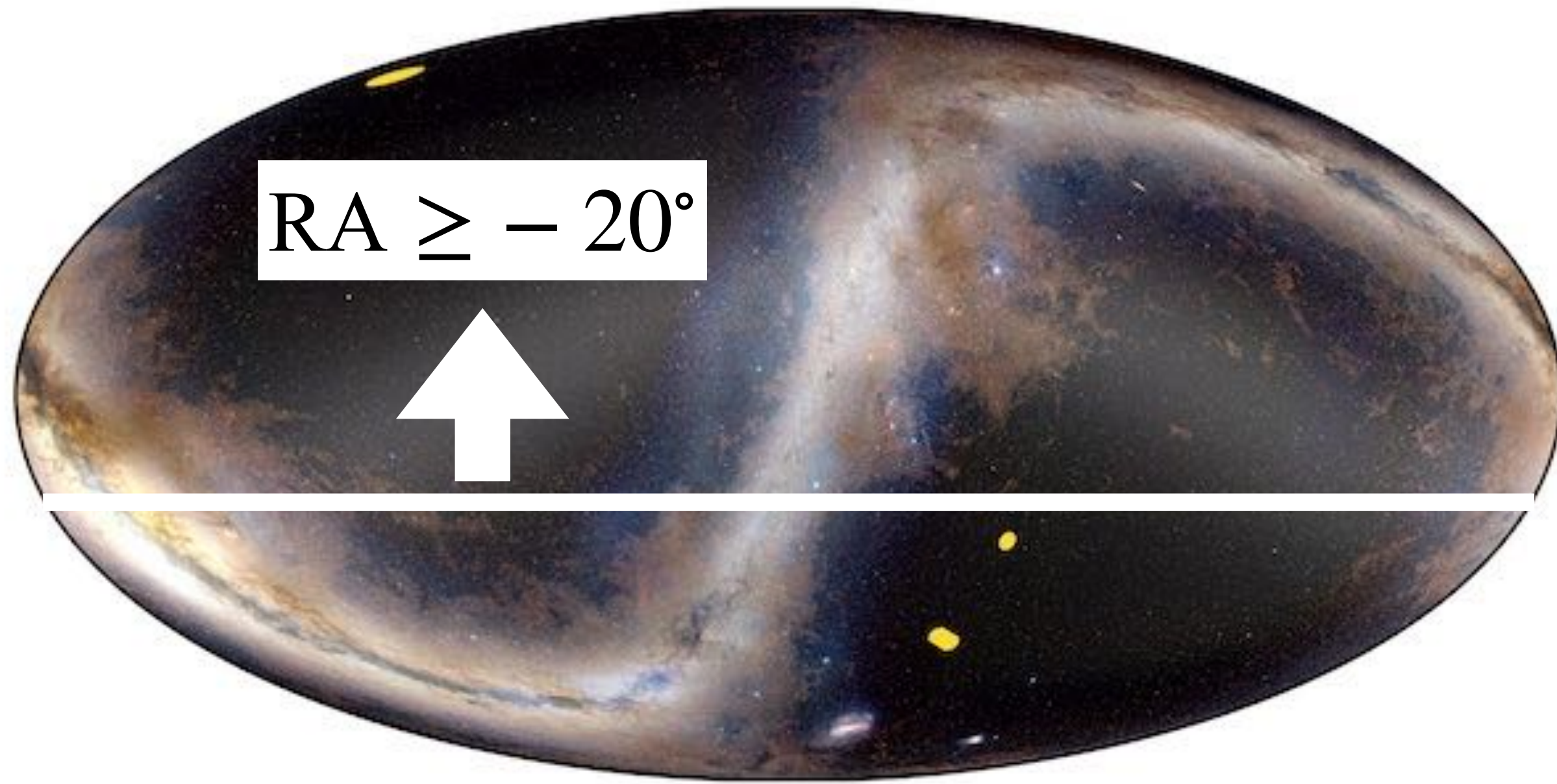


Follow-up RV observations

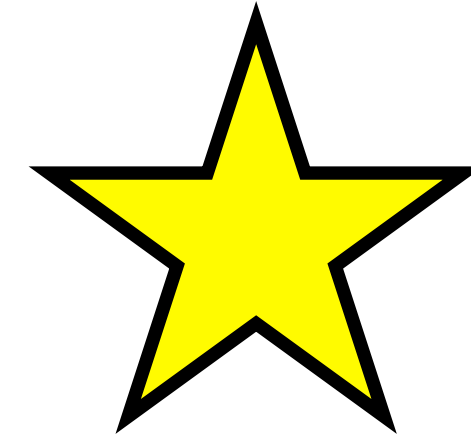
Needs for follow-up observations



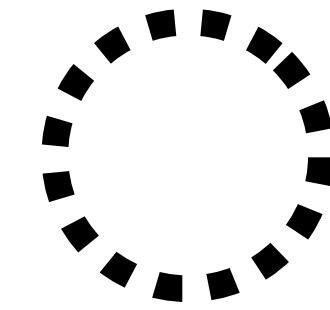
Candidate selection



BH/NS candidate



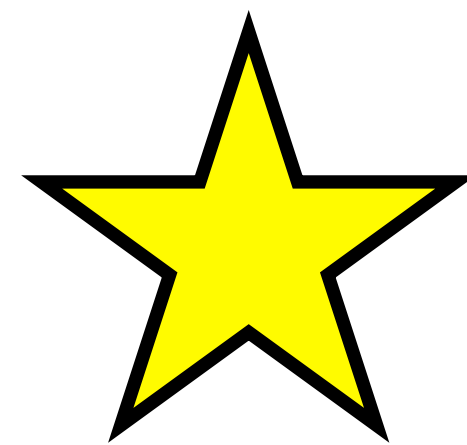
$G_1 \leq 13$ mag
Later than F-type
Not too bright



$m_2 \geq 1.35M_{\odot}$

$$M_{G,1} = -2$$

$$m_1 \sim 10M_{\odot}$$



$$m_2 = 1.4M_{\odot}$$

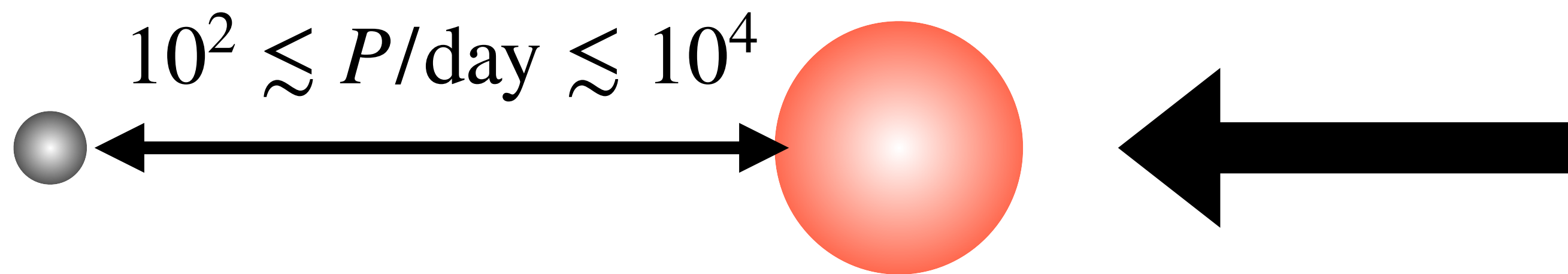


NS: $M_{G,2} \gg M_{G,1}$

MS: $M_{G,2} \sim 3.3$

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