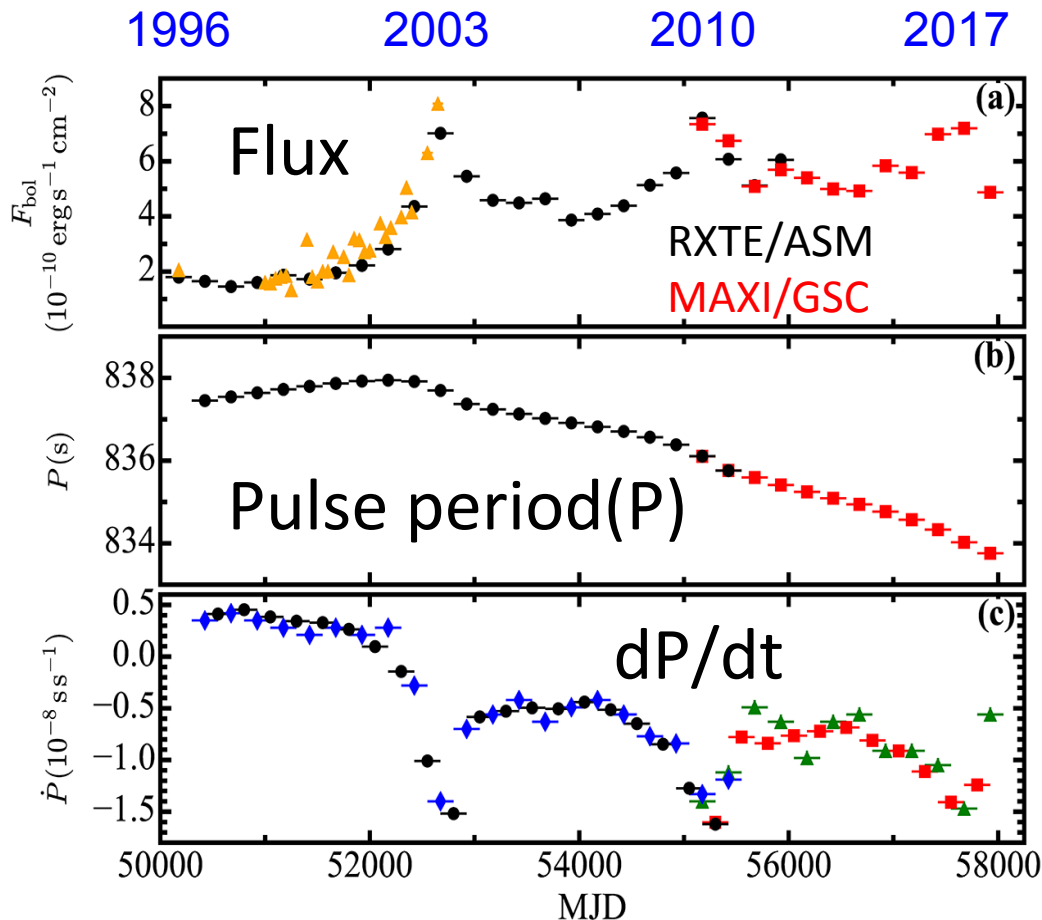


An application of the Ghosh & Lamb model to the accretion-powered X-ray pulsar X Persei - Yatabe et al 2018-

Fumiaki Yatabe (RIKEN / Rikkyo University)

▪ The X-ray fluxes and pulse-period changes of the Be/X-ray binary pulsar X Persei were investigated over a period of 1996 to 2017 by RXTE/ASM and MAXI/GSC.

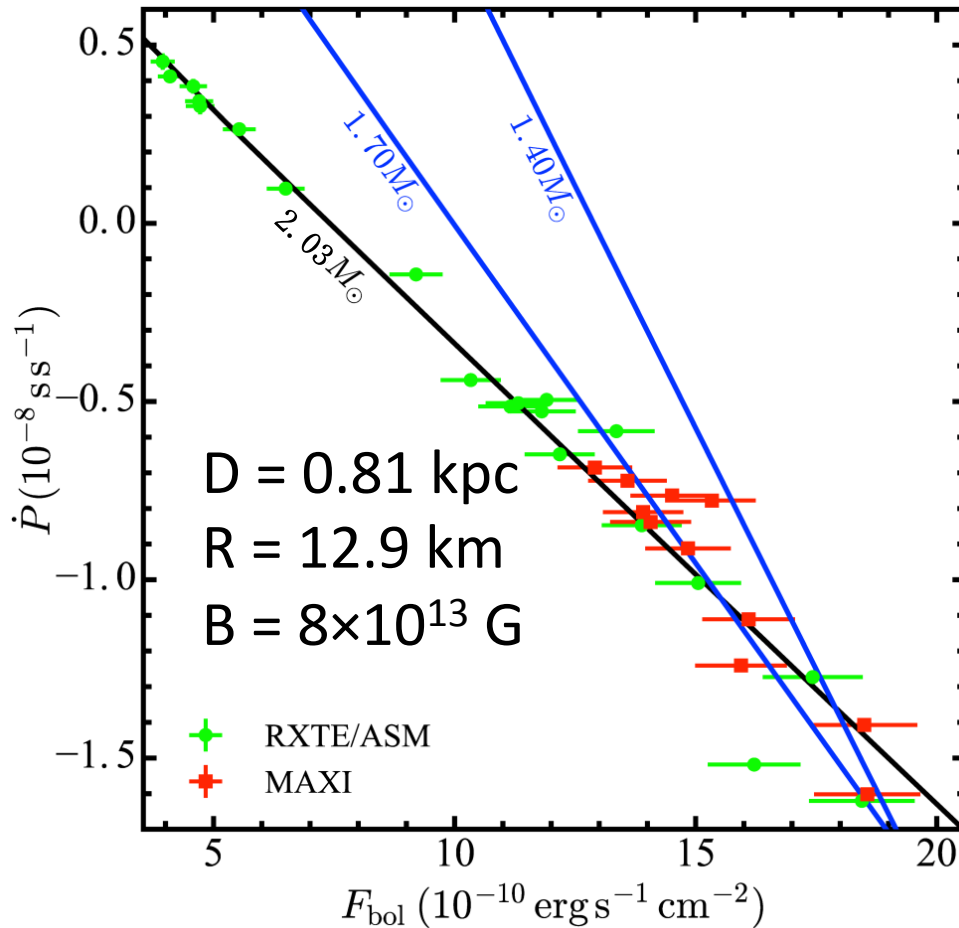


▪ The history of X-ray fluxes suggest a 7-years super-orbital period.

▪ The pulsar was spinning down for 1996-2002, and has been spinning up since 2002.

▪ The spin up/down rate and the X-ray flux showed a clear negative correlation.

- dP/dt vs F_{bol} showed a clear negative correlation
 → fitted with Ghosh & Lamb (1979) relation



- We assumed that the ranges of radius (R) and distance (D) of the neutron star are

$R = 9.5\text{--}15 \text{ km}$ (realistic range)

$D = 0.77\text{--}0.85 \text{ kpc}$ (GAIA DR2).



The magnetic field strength (B) and mass (M) of X Per are estimated as

$$B = (5\text{--}23) \times 10^{13} \text{ G}$$

$$M = 2.03 \pm 0.17 M_{\odot}$$