TCP J21040470+4631129 : 特異なRebrighteningを示すWZ Sge型矮新星

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VSNET collaborations & VSOLJ collaborations

Today's Topic

I, Dwarf Novae and Rebrightenings

II, Observation & Analysis of
TCPJ21040470+4631129

III, Discussion

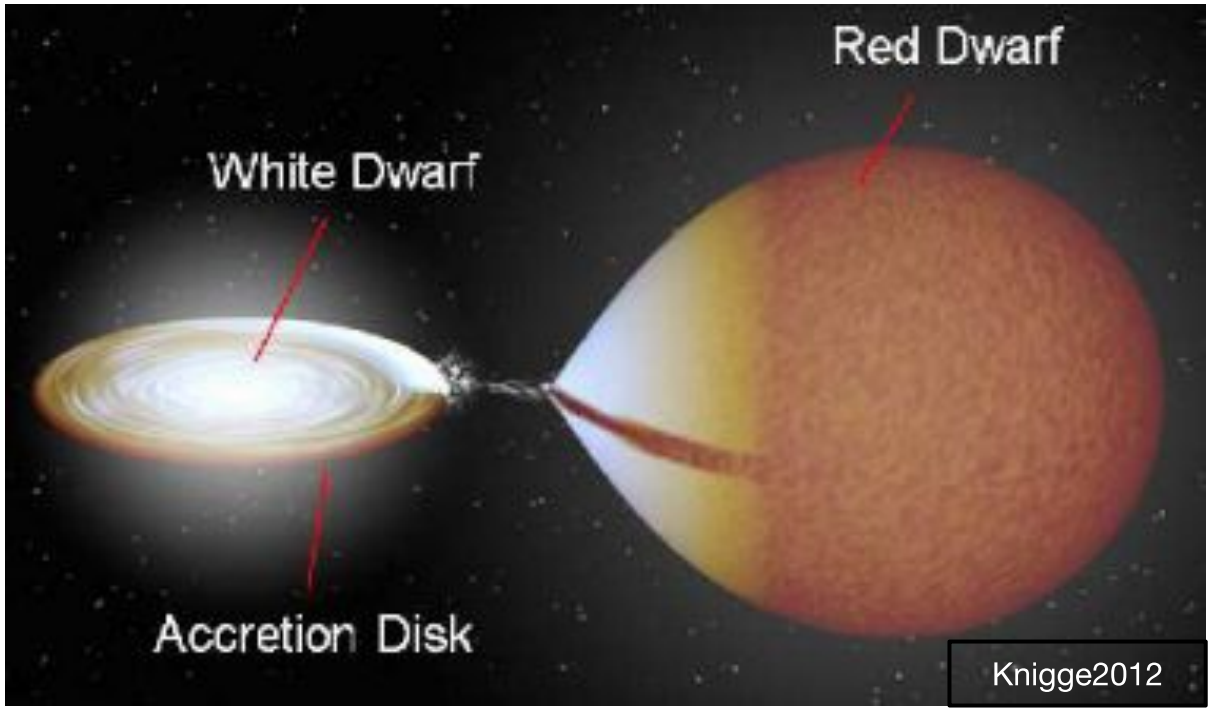
IV, Summary and Future Work

I, Dwarf Novae and Rebrightenings

Cataclysmic Variables (CVs)

-->close binary composed with WD and low mass star

- Novae
- Nova-like stars
- **Dwarf Novae**
- Polar
- SNe Ia

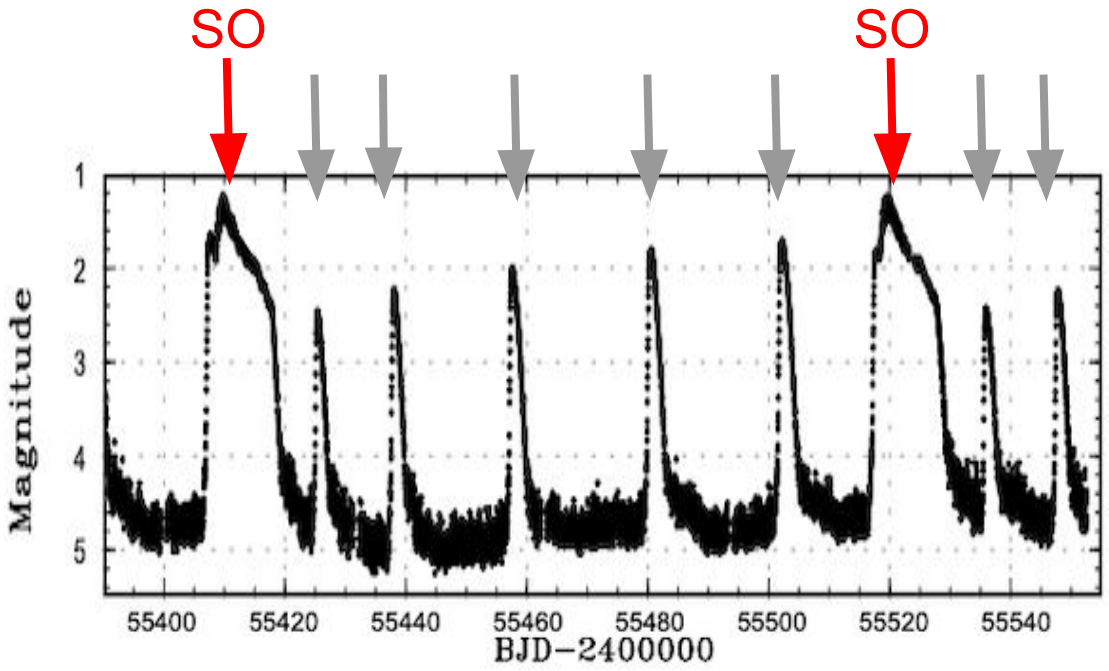


I, Dwarf Novae and Rebrightenings

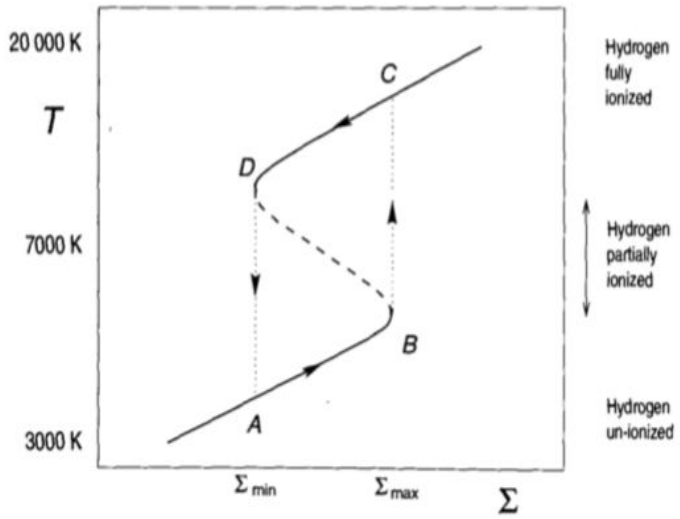
Dwarf Novae (DNe)

・(Super) Outburst

by thermal (- tidal) instability of accretion disk

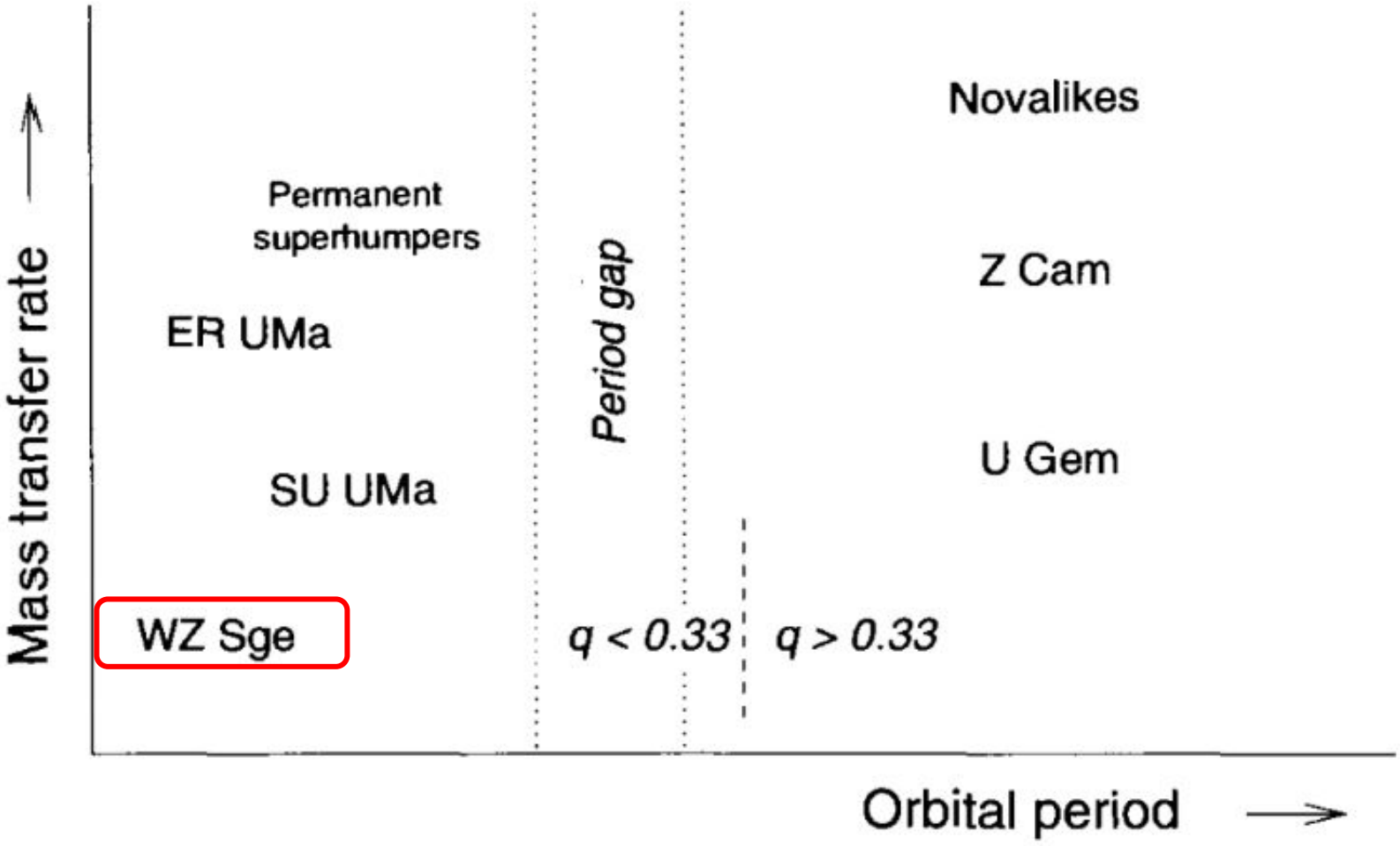


Osaki&Kato2013



Hellier2001

I, Dwarf Novae and Rebrightenings



Hellier2001

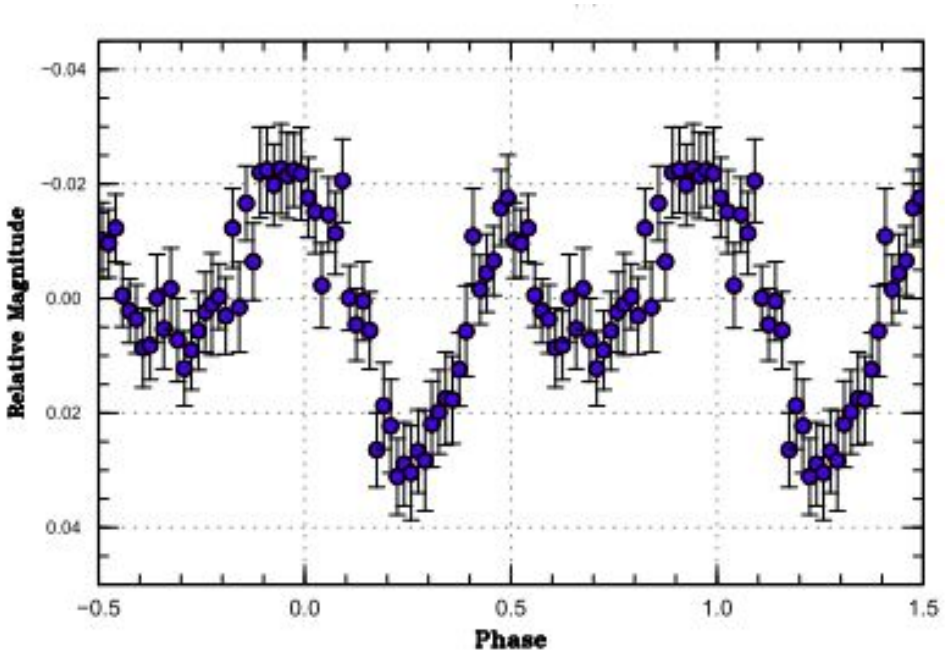
I, Dwarf Novae and Rebrightenings

WZ Sge-type DNe

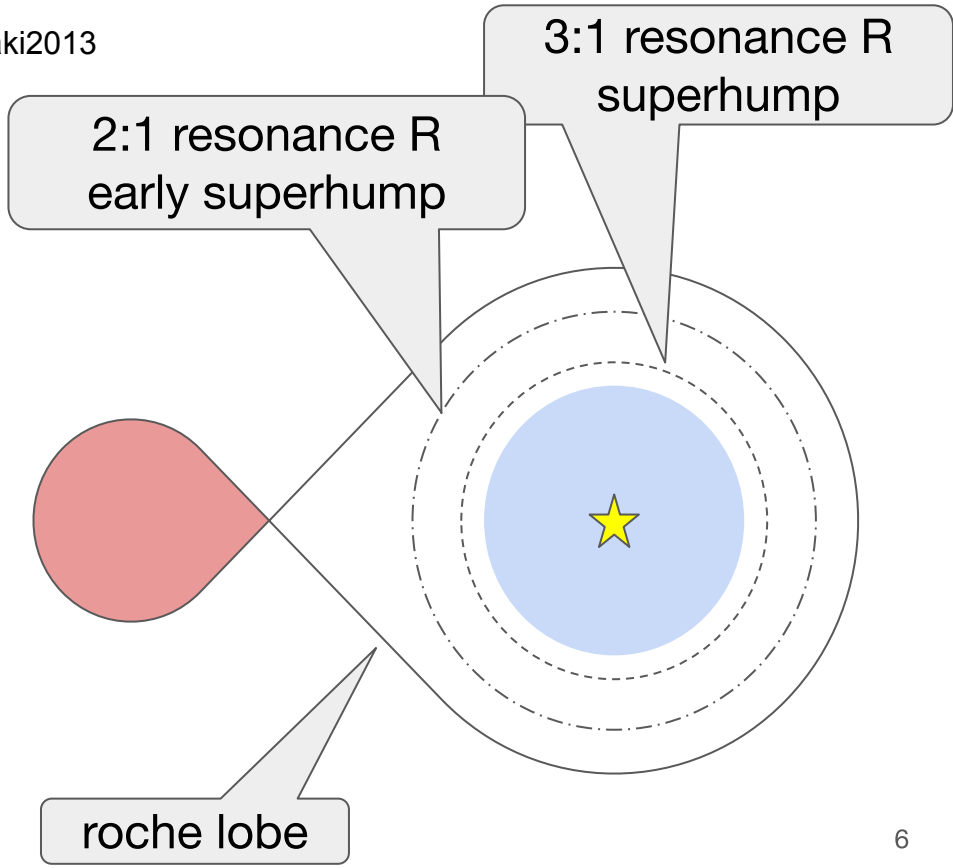
- DNe with an evolved secondary
- Early Superhump (dourble peak, period of ES ~ Porb)

→ mass ratio q

Kato&Osaki2013

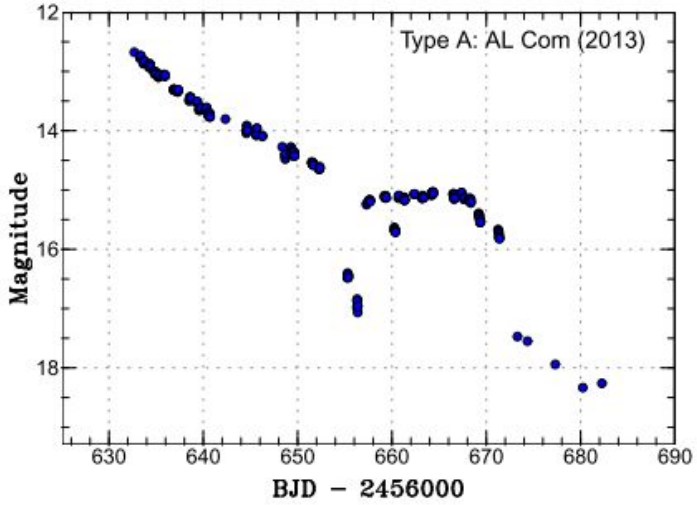


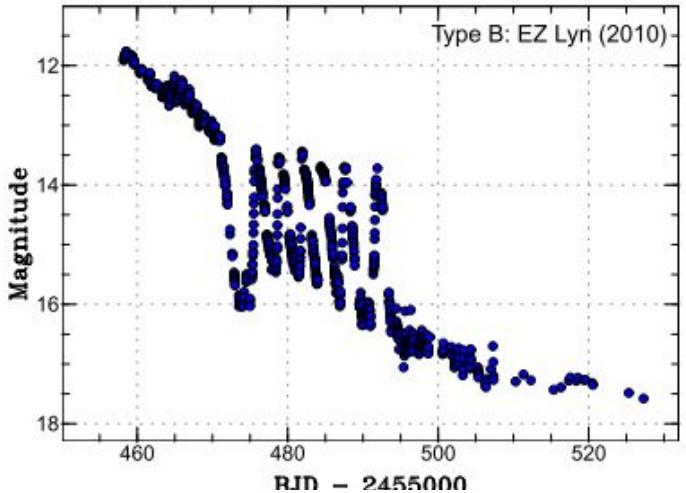
Kato+2013

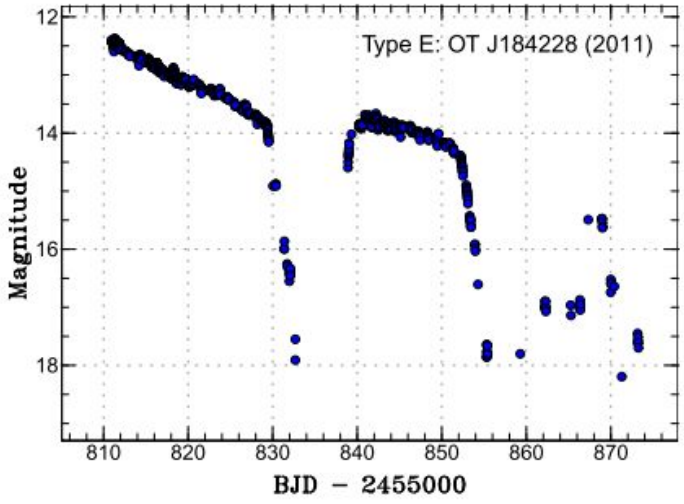


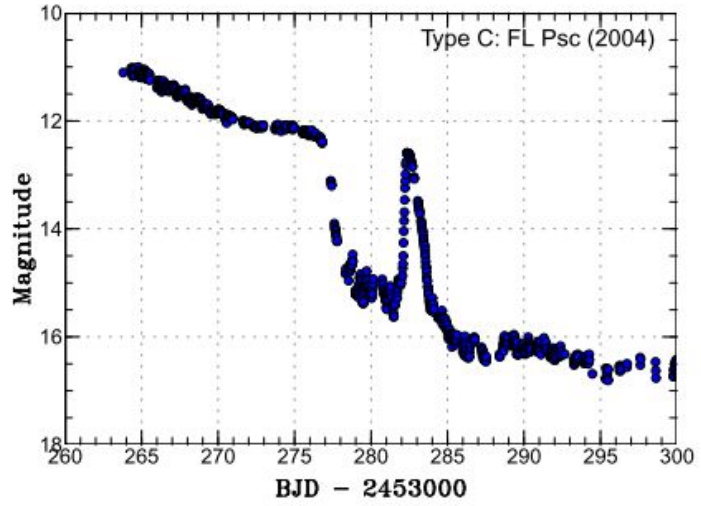
I, Dwarf Novae and Rebrightenings

Rebrightening；outbursts after the main Superoutburst









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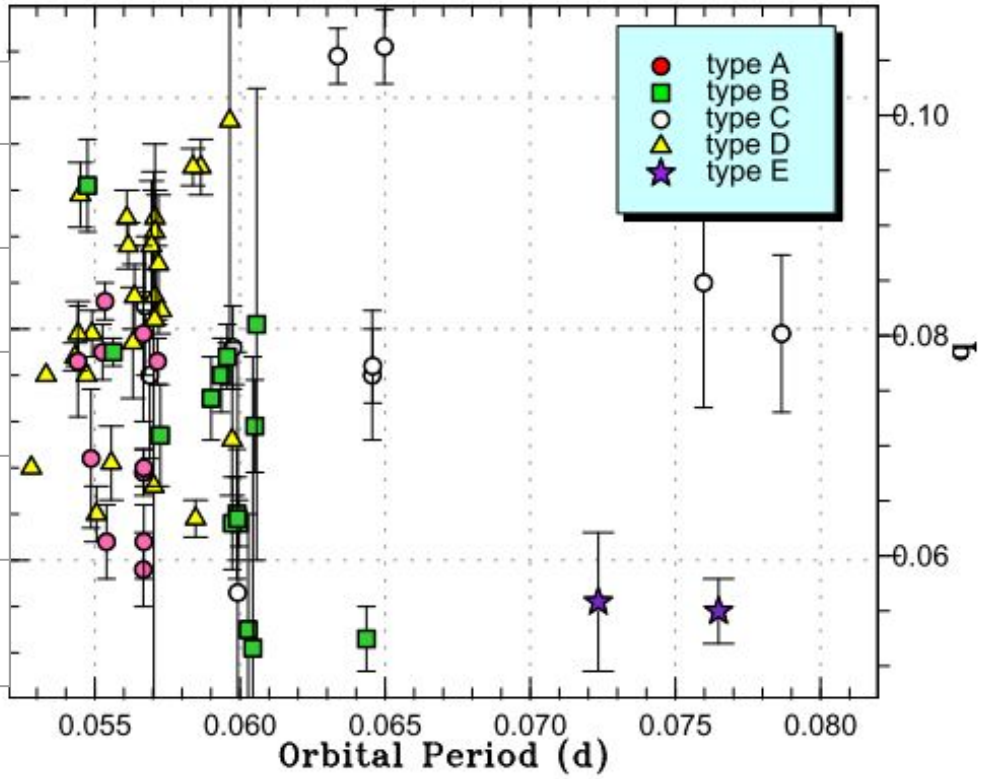
I, Dwarf Novae and Rebrightenings

WZ Sge-type DNe

・types of Rebrightening；marker of evolveness?

type		evol.
A	long-duration rebrightening	**3**
B	multiple rebrightenings	**4**
C	single rebrightening	**1**
D	no rebrightening	**2**
E	SO w/ early SH + another SO w/ ordinary SH	**5**



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II, Observation & Analysis of TCP J21040470+4631129

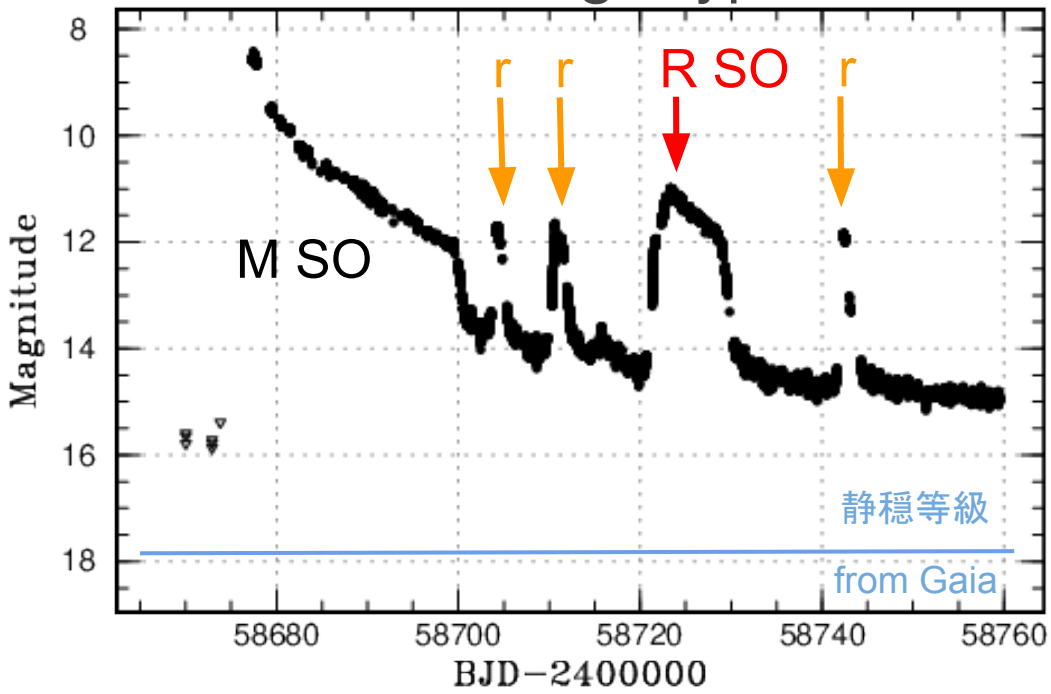
TCP J21040470+4631129

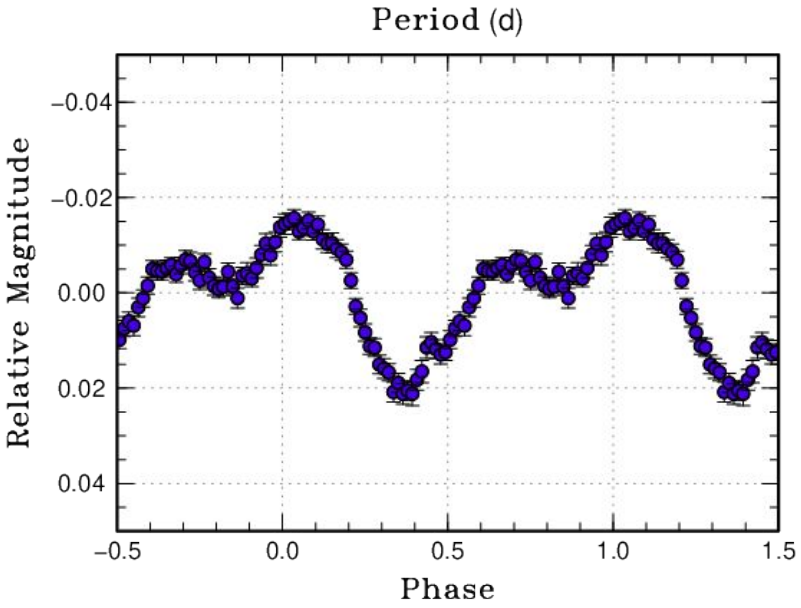
・discovered by Hideo Nishimura on 12th July 19.

・~9 mag superoutburst

・early superhumps & rebrightenings

—> WZ Sge-type DNe

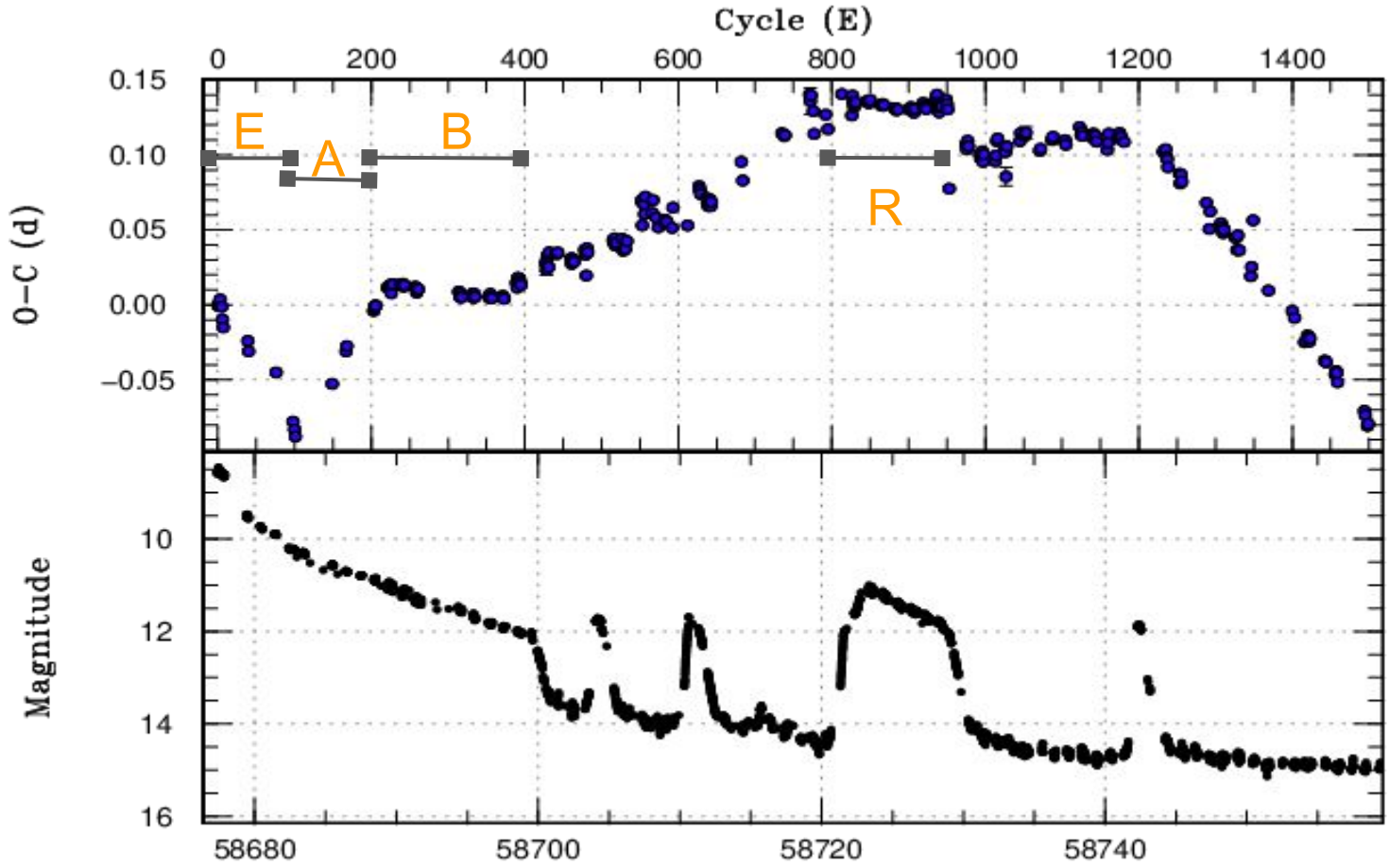




II, Observation & Analysis of TCP J21040470+4631129

O - C diagram

→ variation & evoltion of superhump period

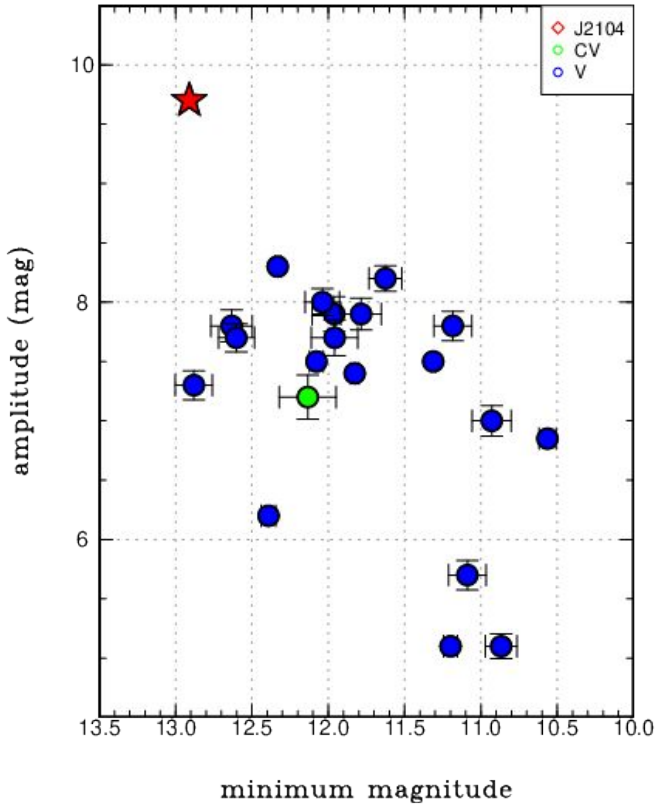


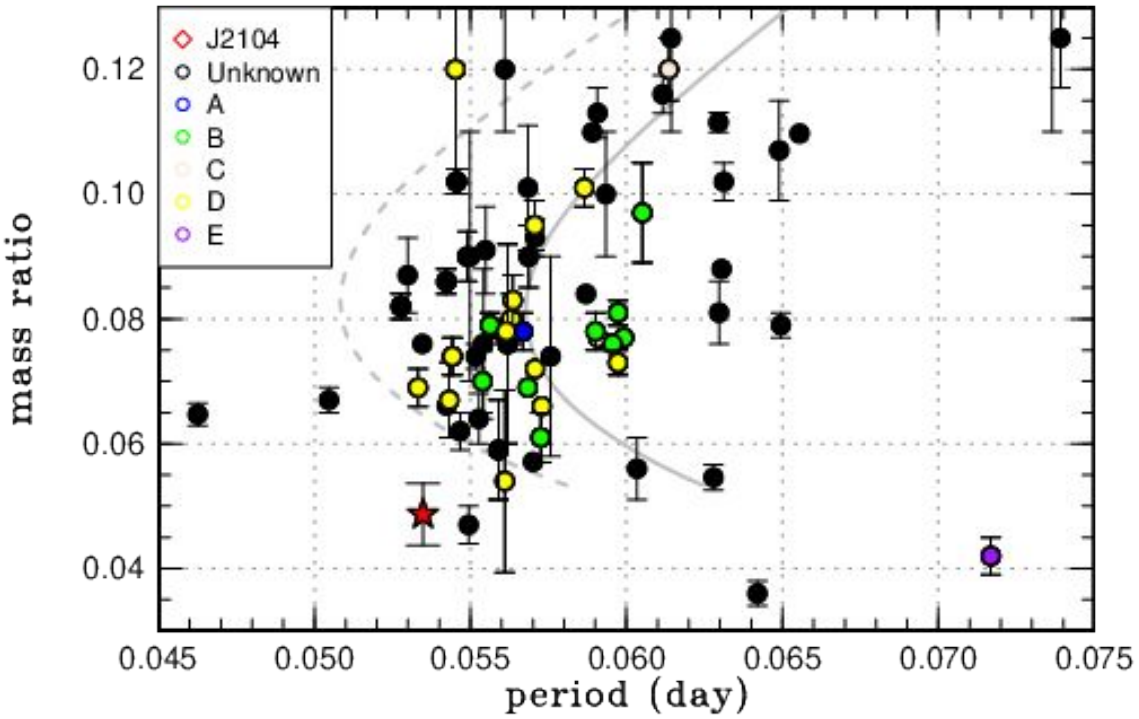
III, Discussion

TCP J2104 in WZ Sge DNe

→ Large Amplitude Superoutburst

→ Below period minimum?





III, Discussion

To trigger the Rebrightening SO ….

→ Disk needed to be bigger than 3:1 resonance R again

- Extra mass transfer to disk
- Angular momentum

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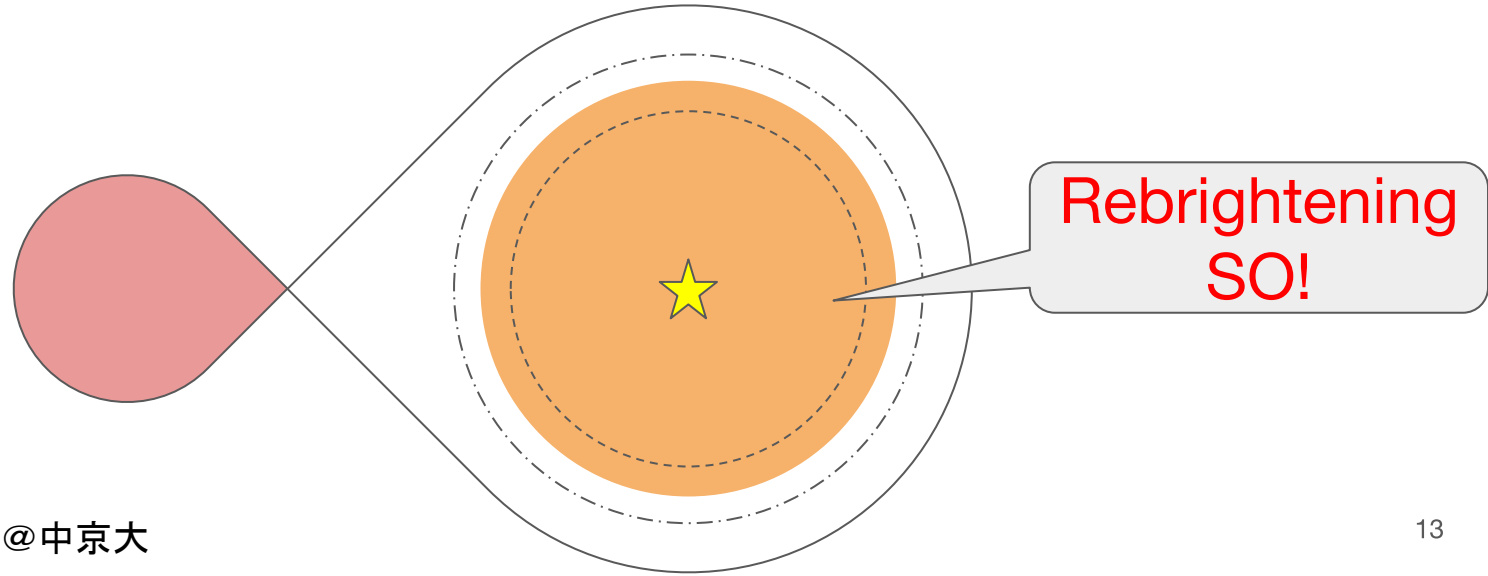
Unaccreted mass in outer disk?



IV, Summary and Future Work

1, New WZ Sge-type DN : TCP J21040470+4631129

2, Early Superhump period is 0.05348 days,

and that of stage A is 0.05450 days.

→ q is 0.04869, this object is an outlayer DN.

3, Superoutburst during its rebrightening seriese

4, Unaccreted mass triggered Rebrightening SO?

---------- Future Work ----------

1, Analysis for theoretical model of disk.

2, Look for similar object(s)