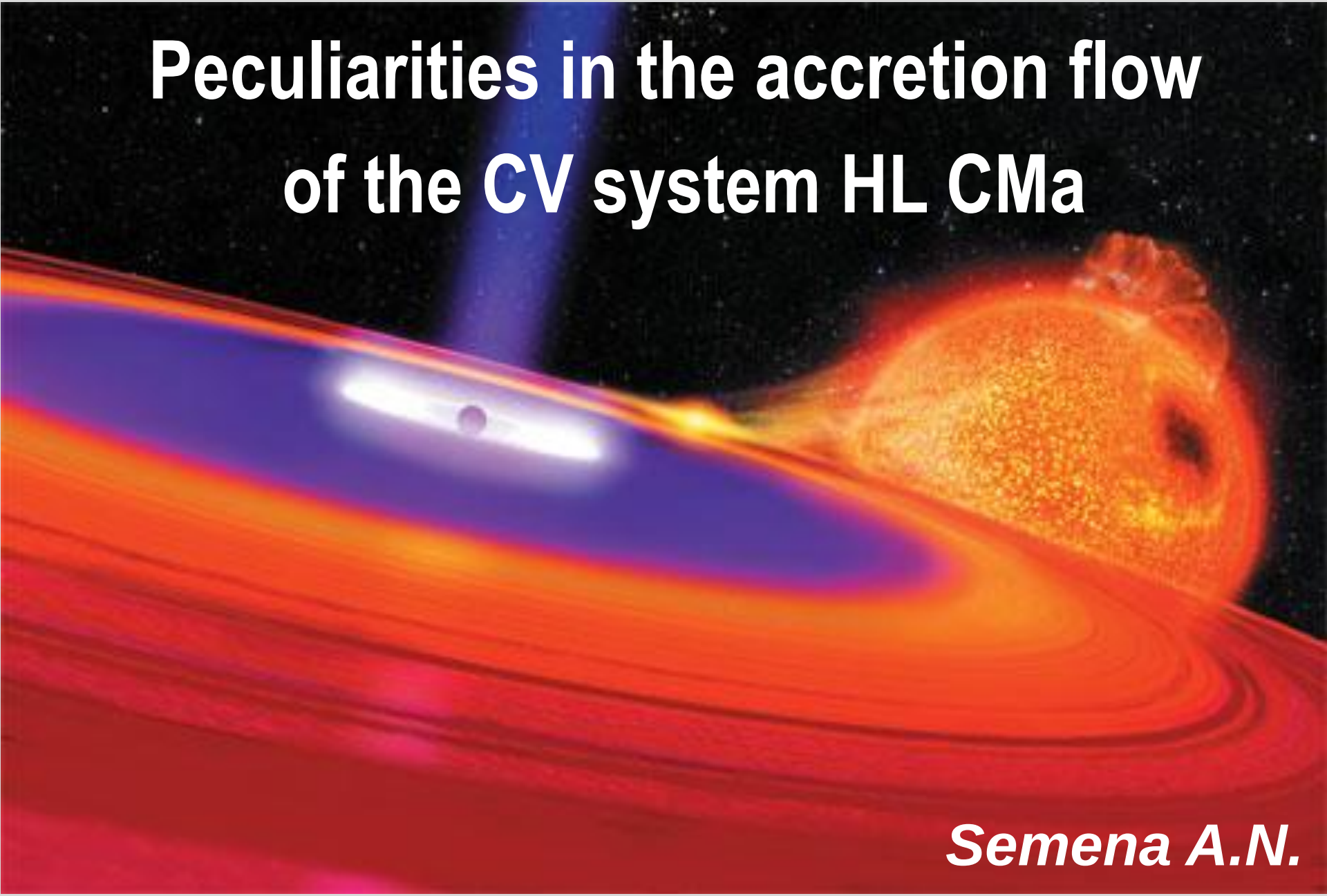
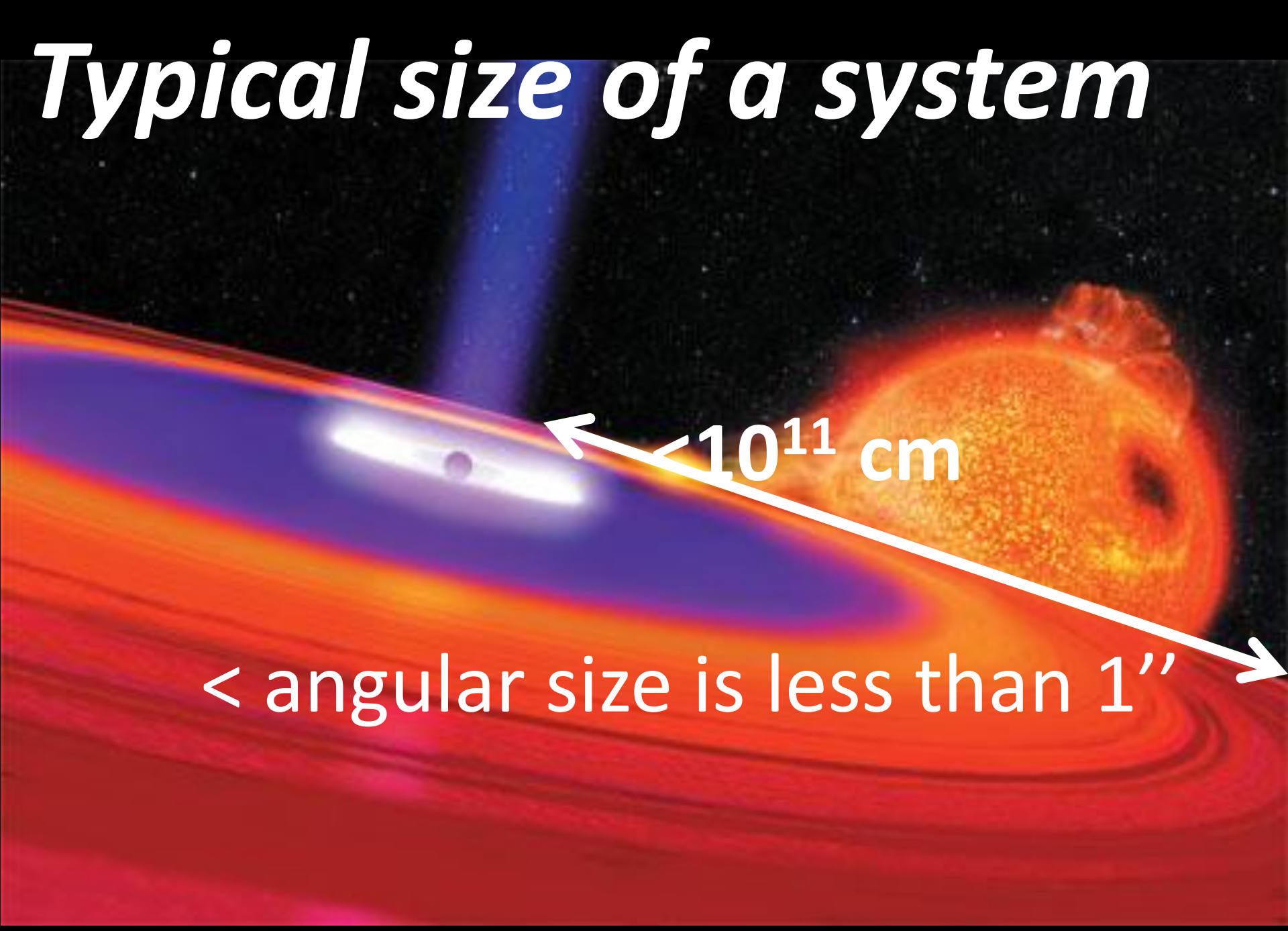

Peculiarities in the accretion flow
of the CV system HL CMa
Semena A.N.

Typical size of a system



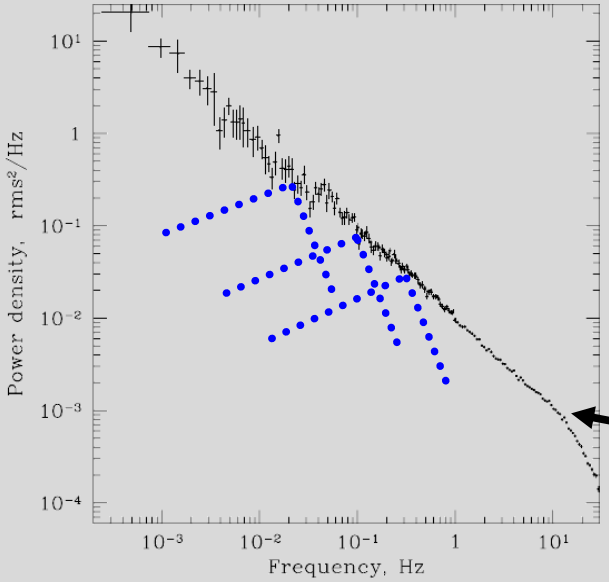
Variability formation in the disk

Lyubarskii 1997

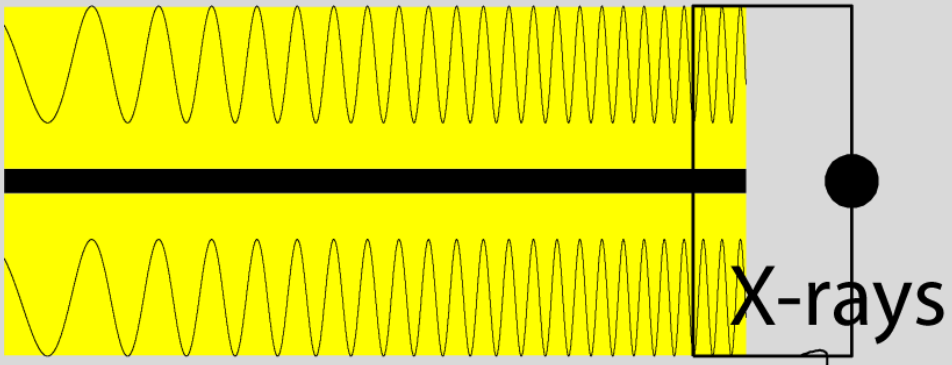
Stochastic variability

Usually seen in the X-ray luminosity of accreting binaries and AGNs

$$\dot{M}(r_i, t) = \dot{M}_o \prod_{j=0}^{i} 1 + \dot{m}(r_j, t),$$



„high" state

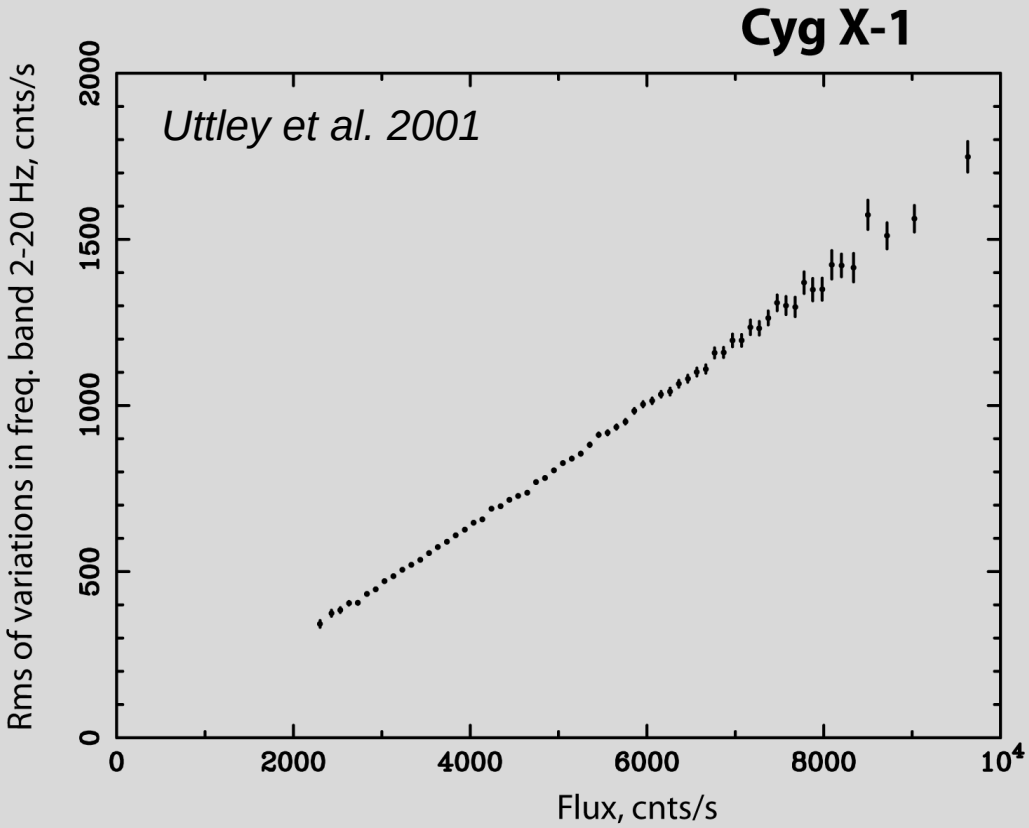


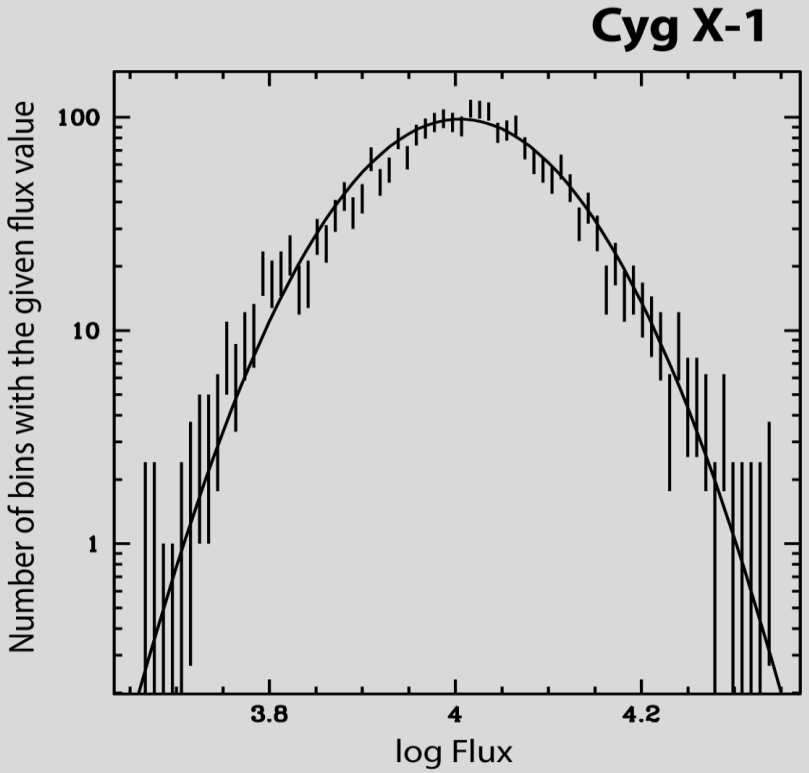
Break in the power spectrum

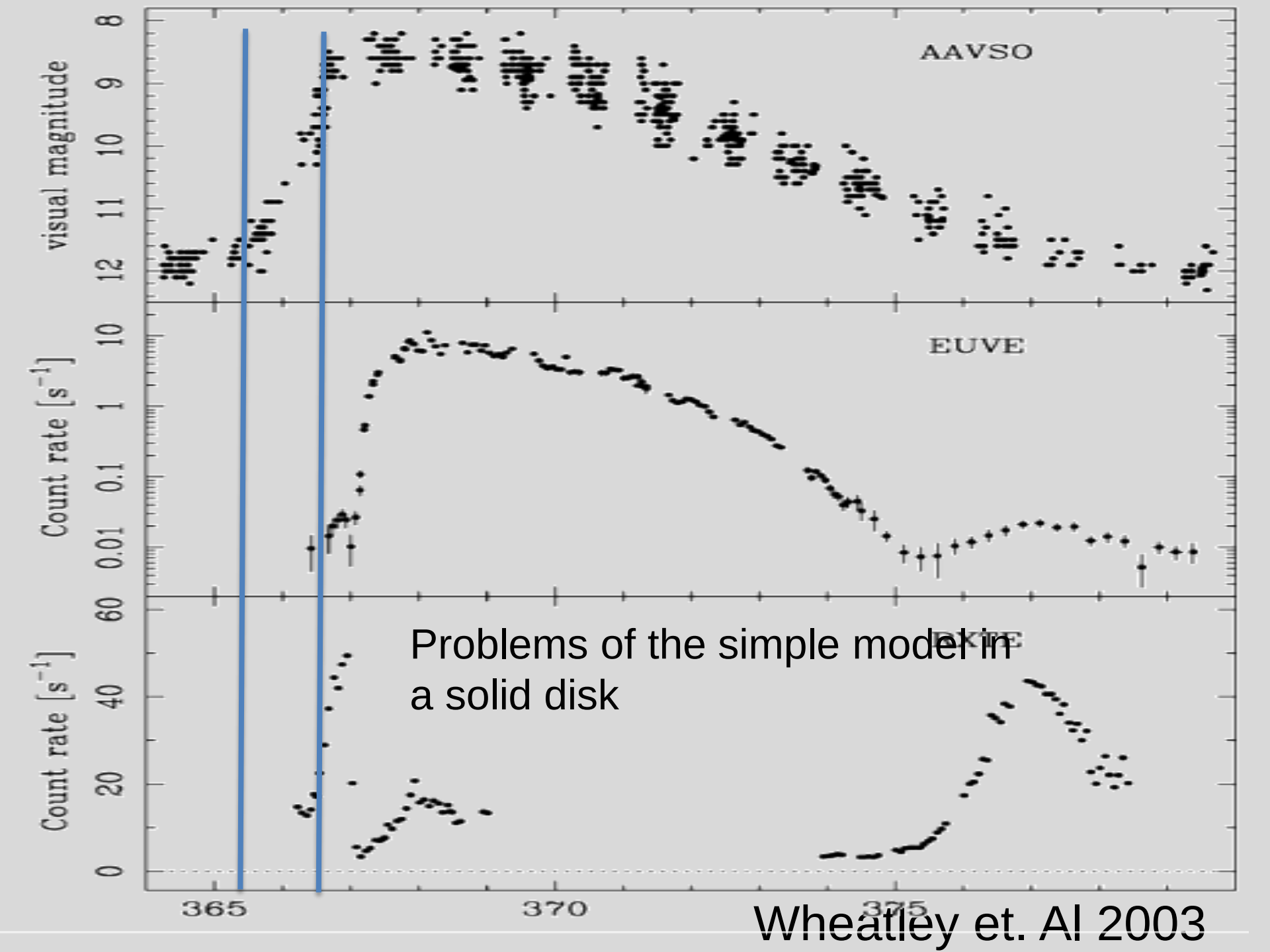
Churazov et al. 2001
Kotov et al. 2001,
Arevalo,Uttley 2006
Revnivtsev et al. 2009
and more

Propagating fluctuations model

Is supported with observable statistical properties of the flux – i.e. log normal flux distribution



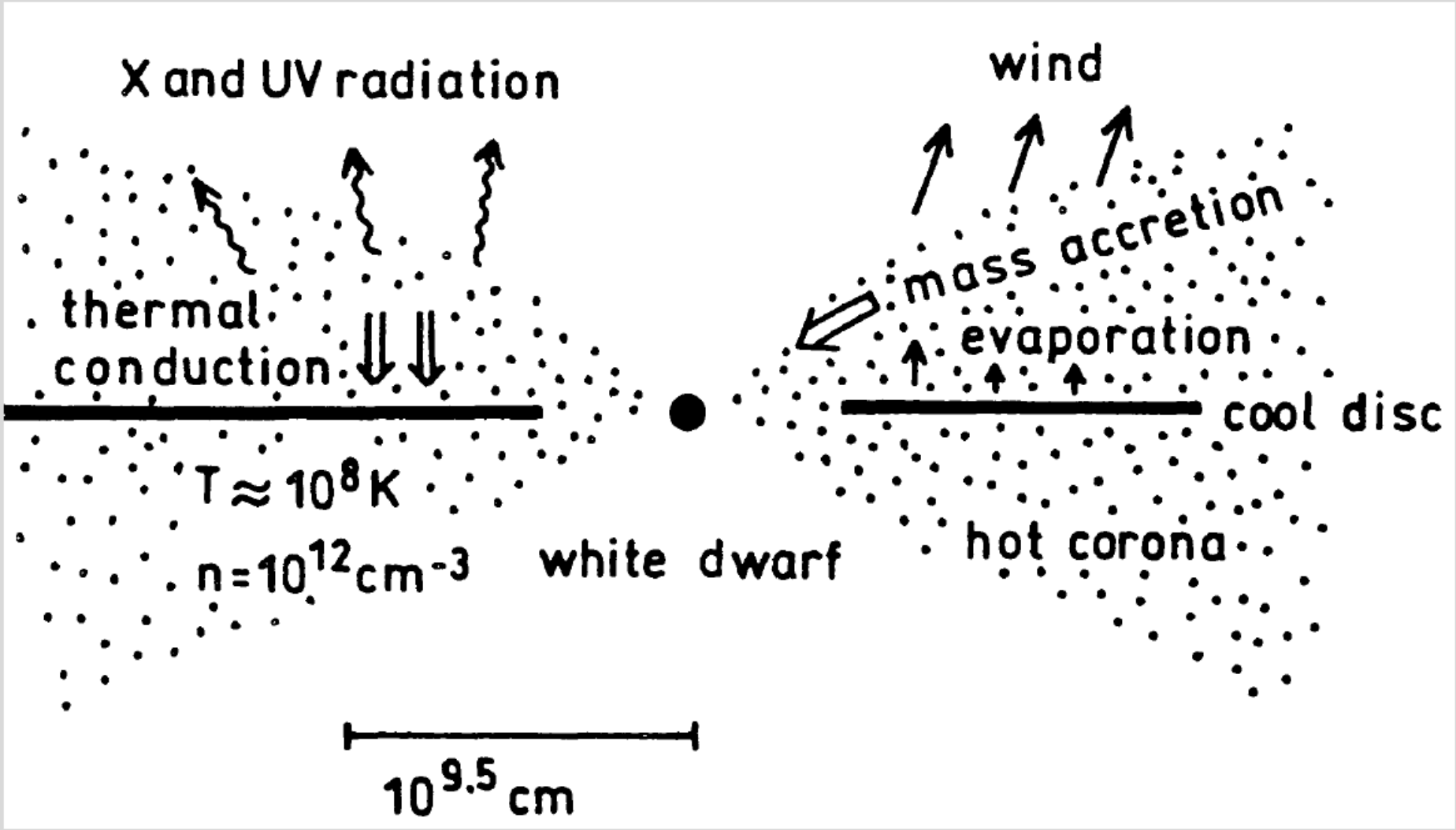




Problems of the simple model in a solid disk

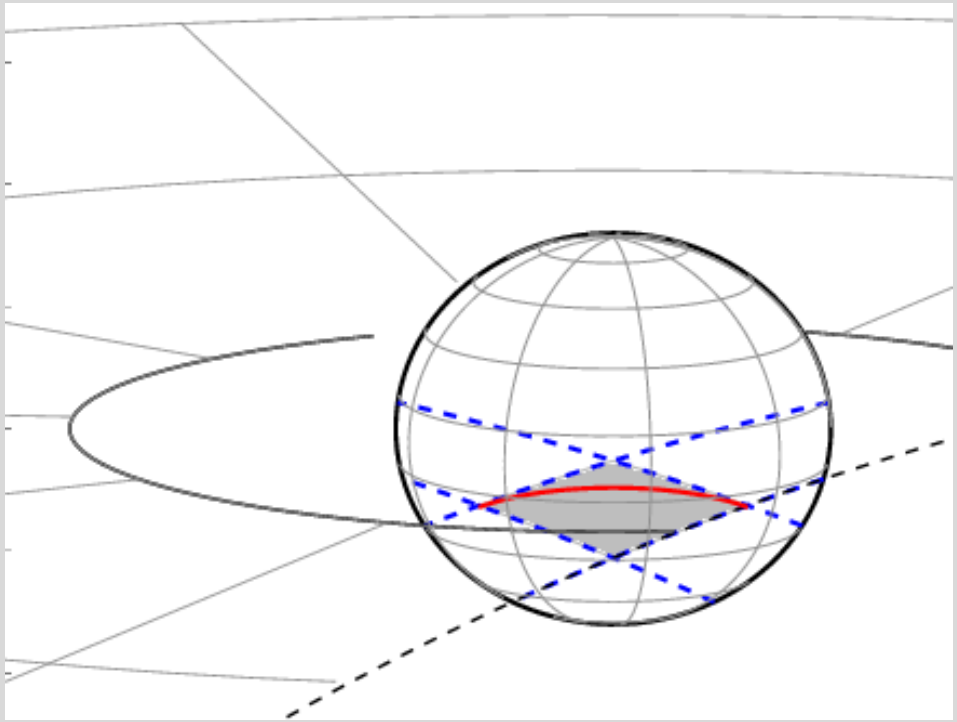
Wheatley et. Al 2003

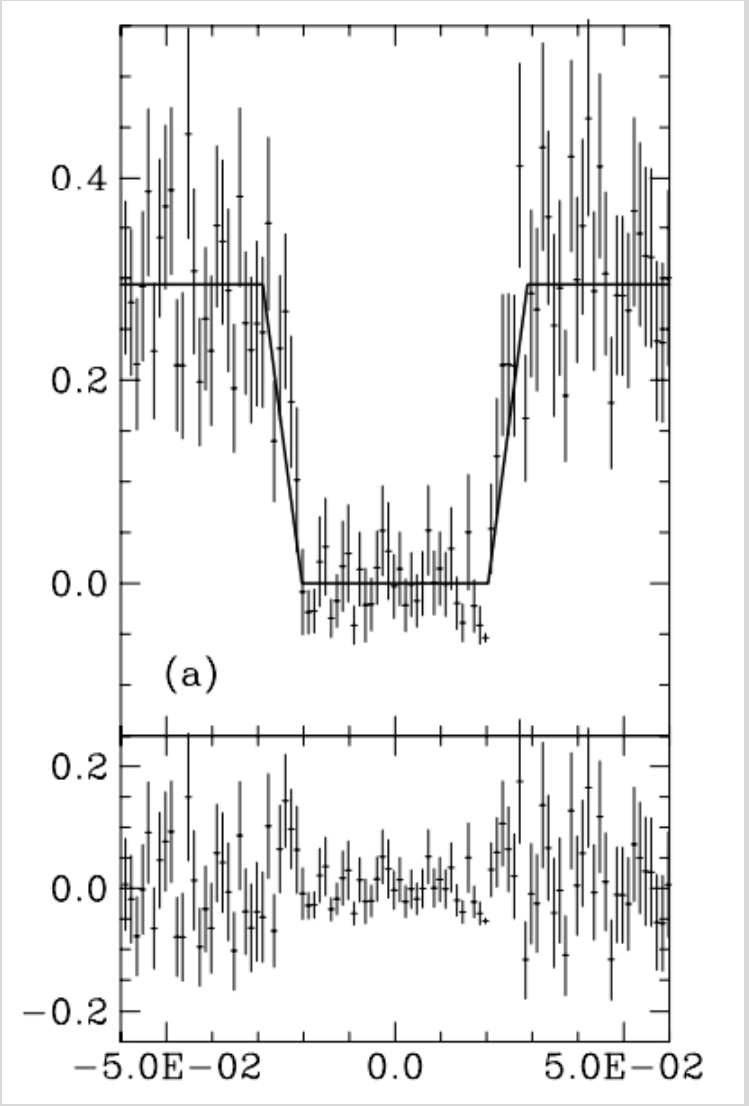
Disk evaporation



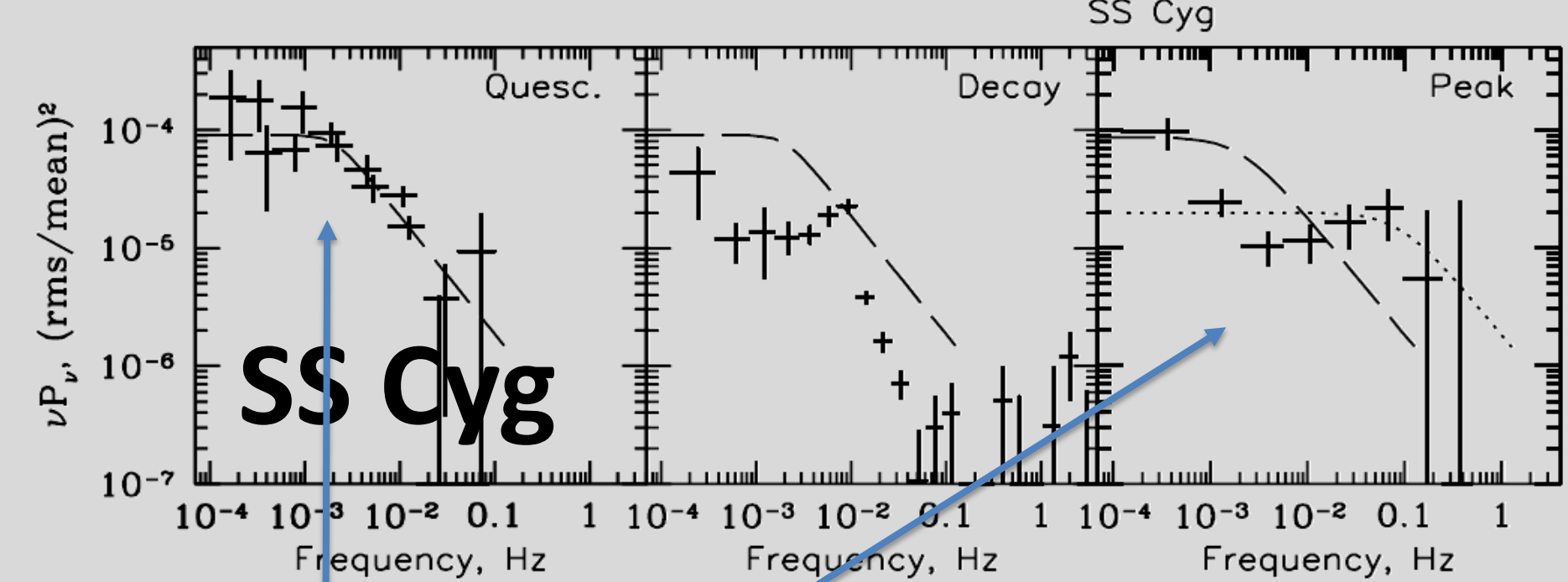
Meyer & Meyer-Hofmeister 1994

X-ray emitting region size

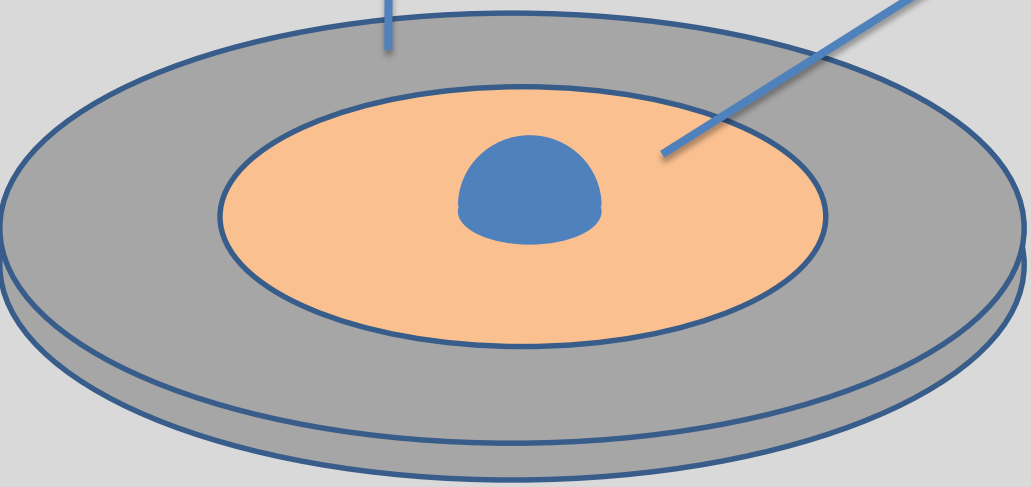


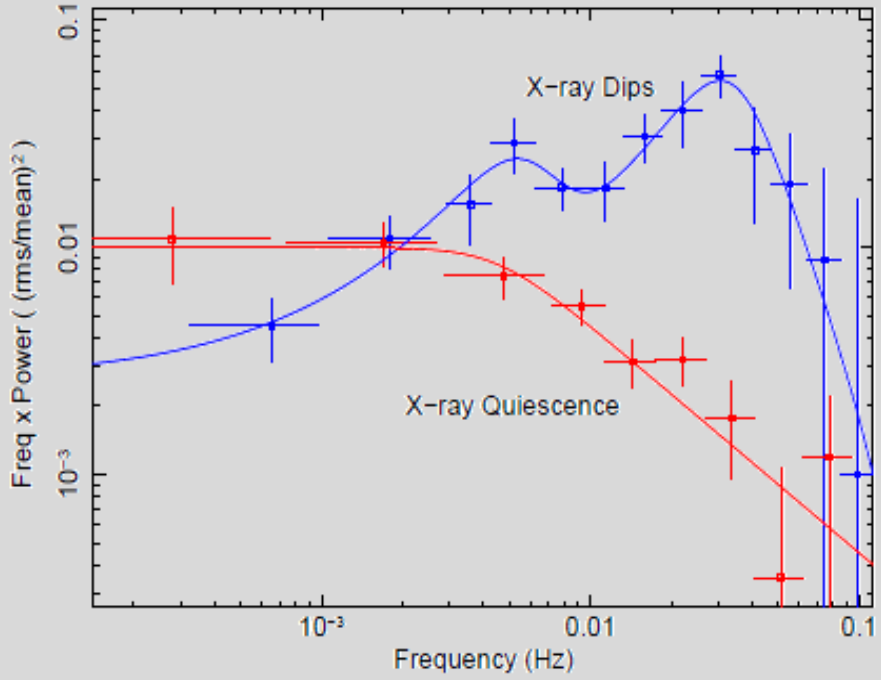


Mukai 1997



SS Cyg

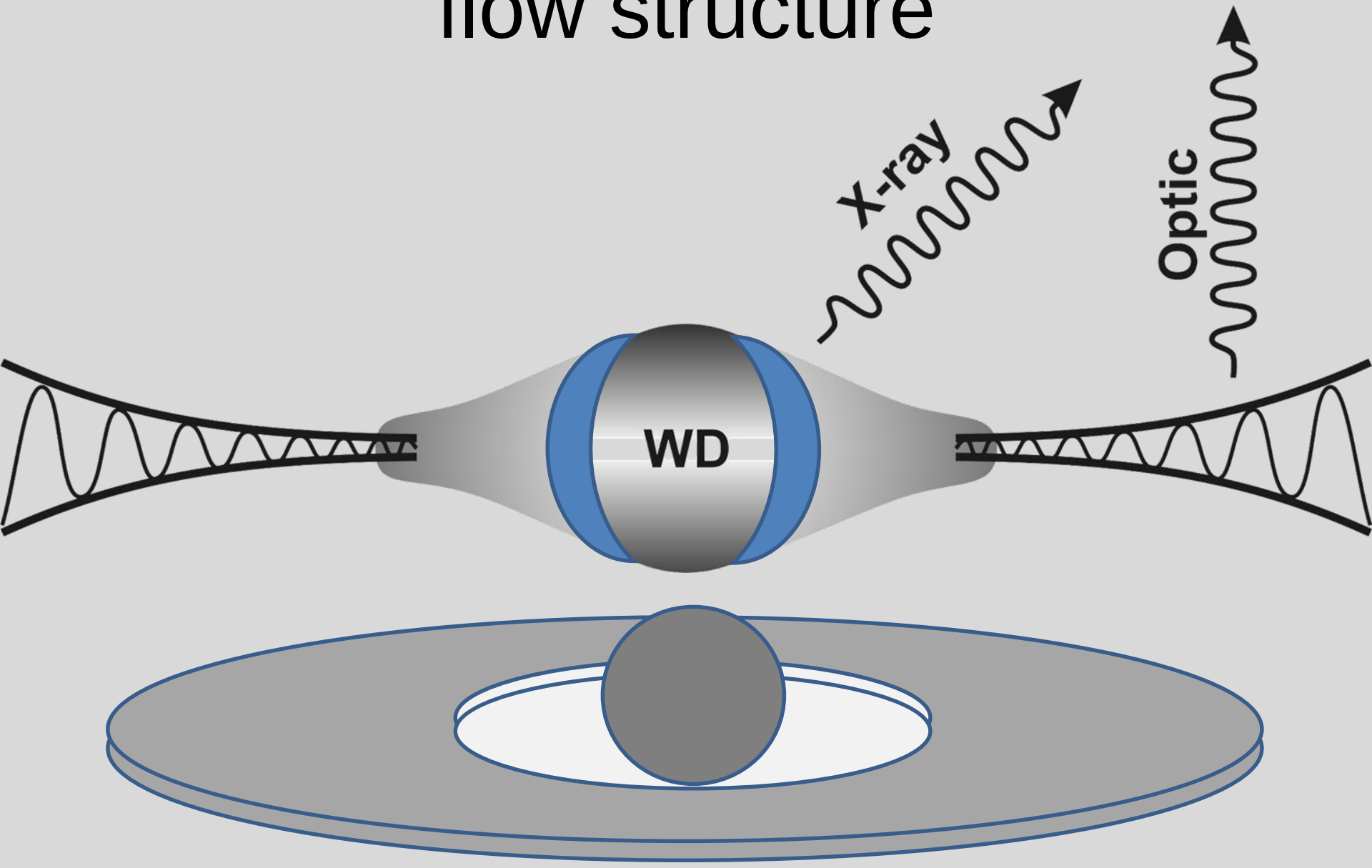




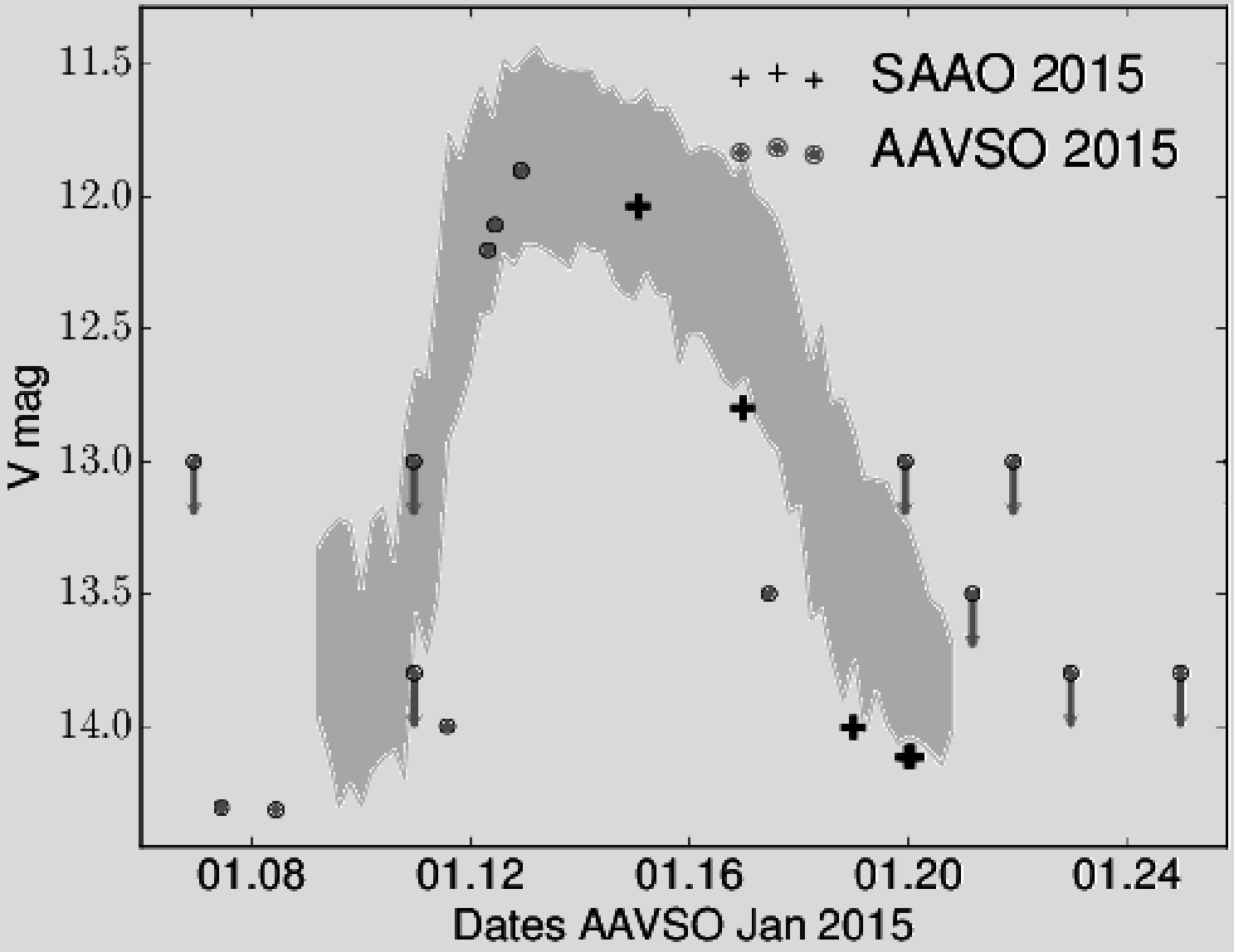
DN Power spectrum evolution during an outburst

Balman & Revnivtsev 2012

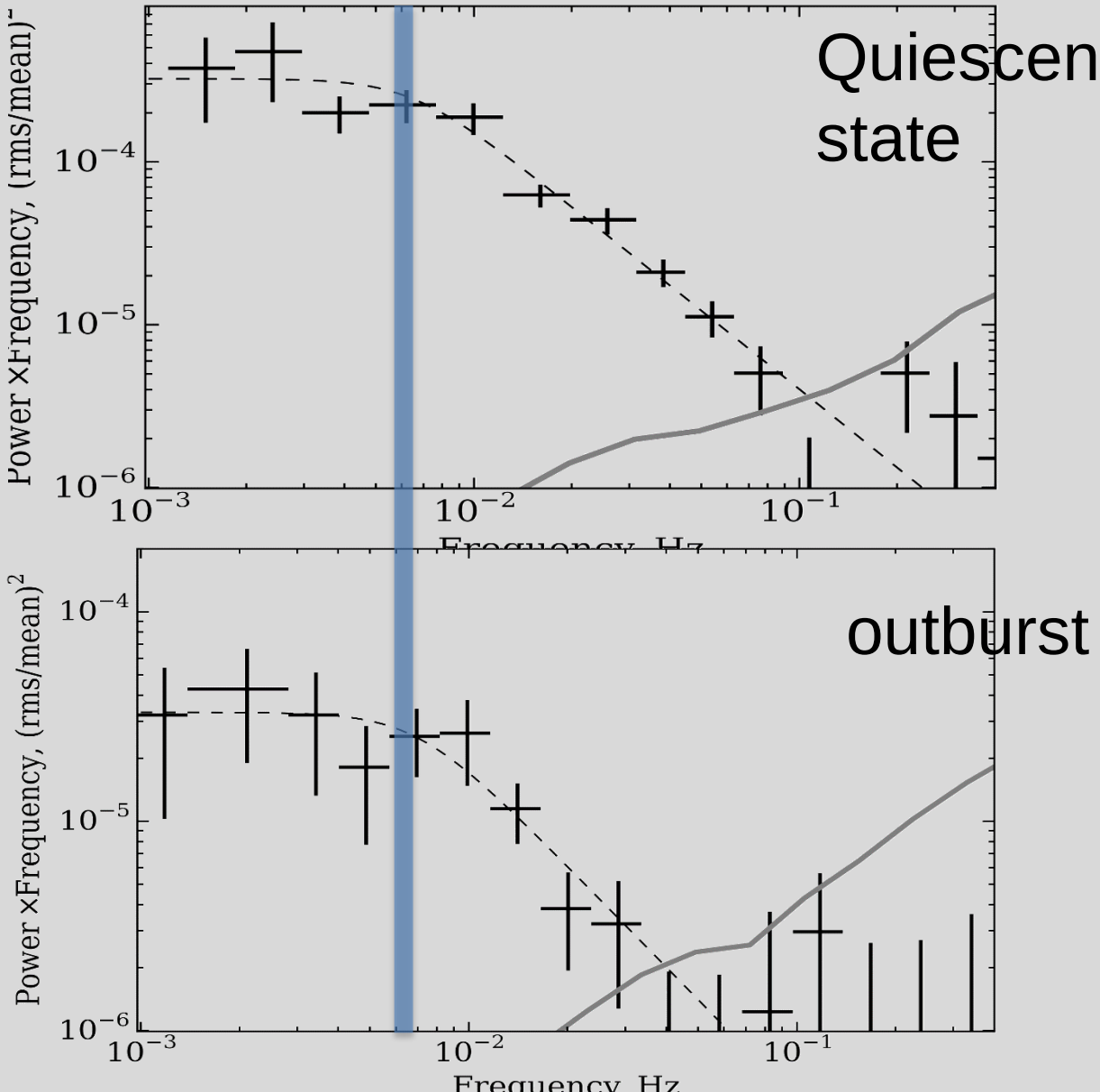
New model for the accretion flow structure



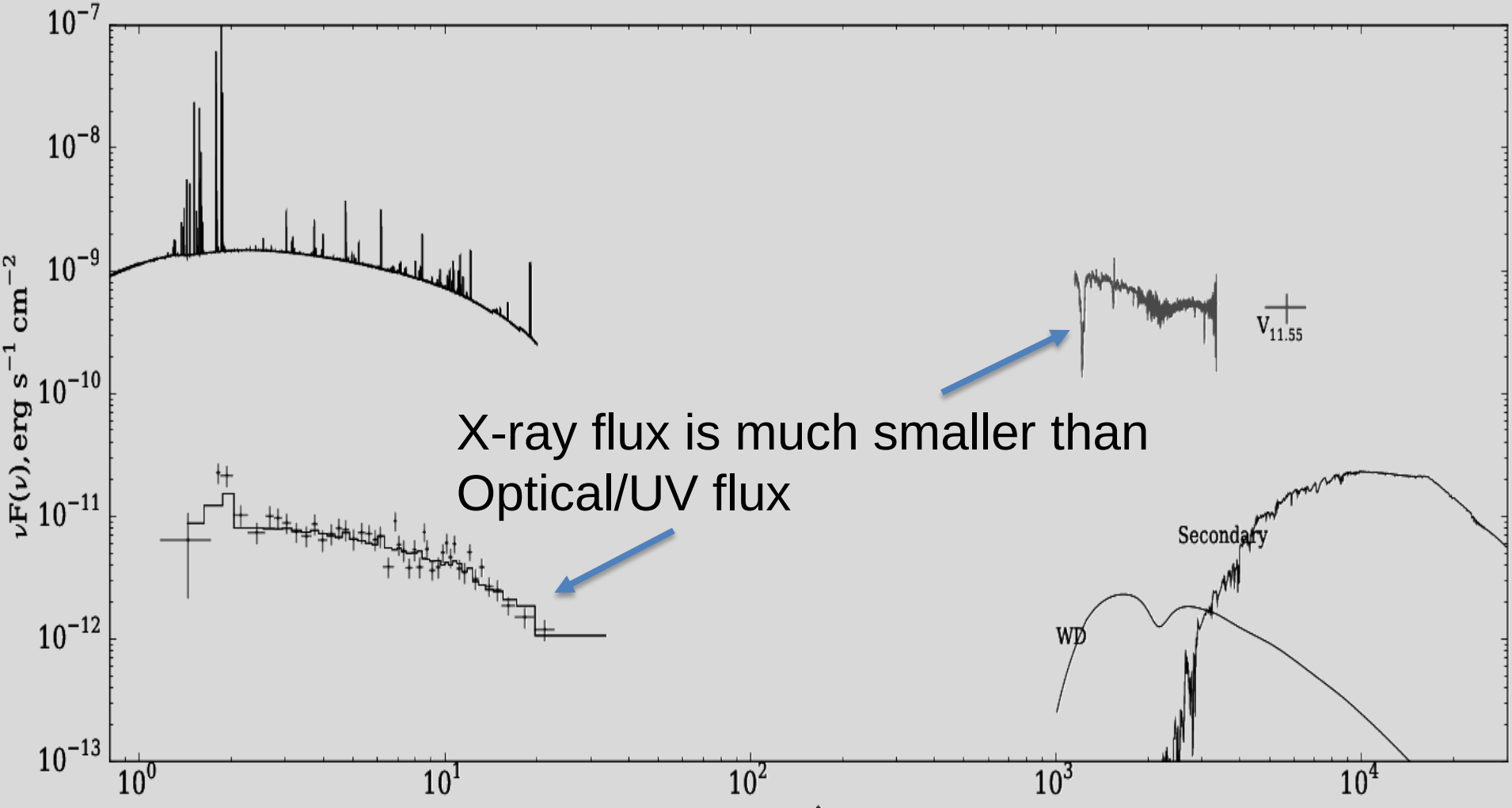
What about other CVs?
HL CMa



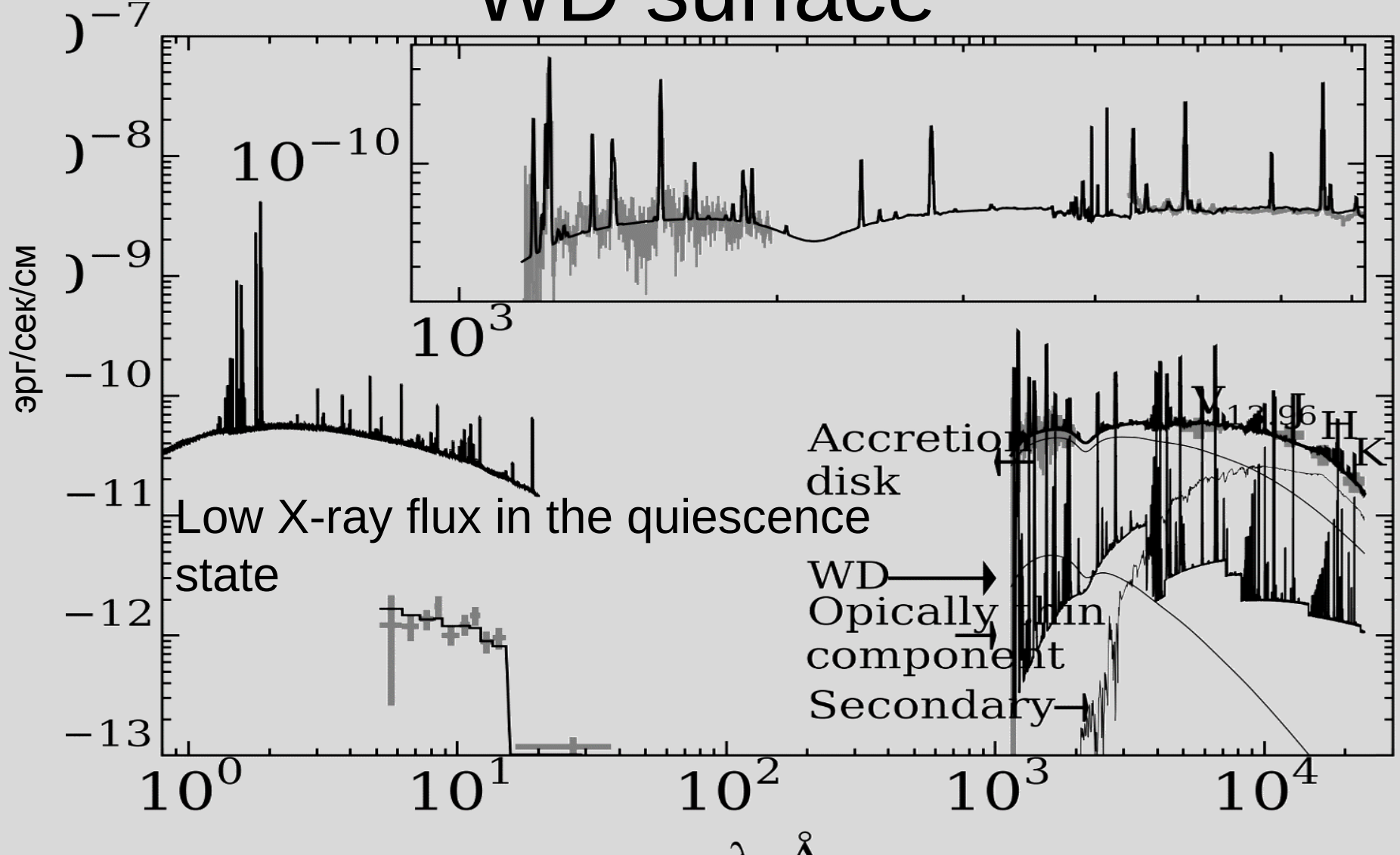
Evolution of HL Cma Power spectrum after the outburst



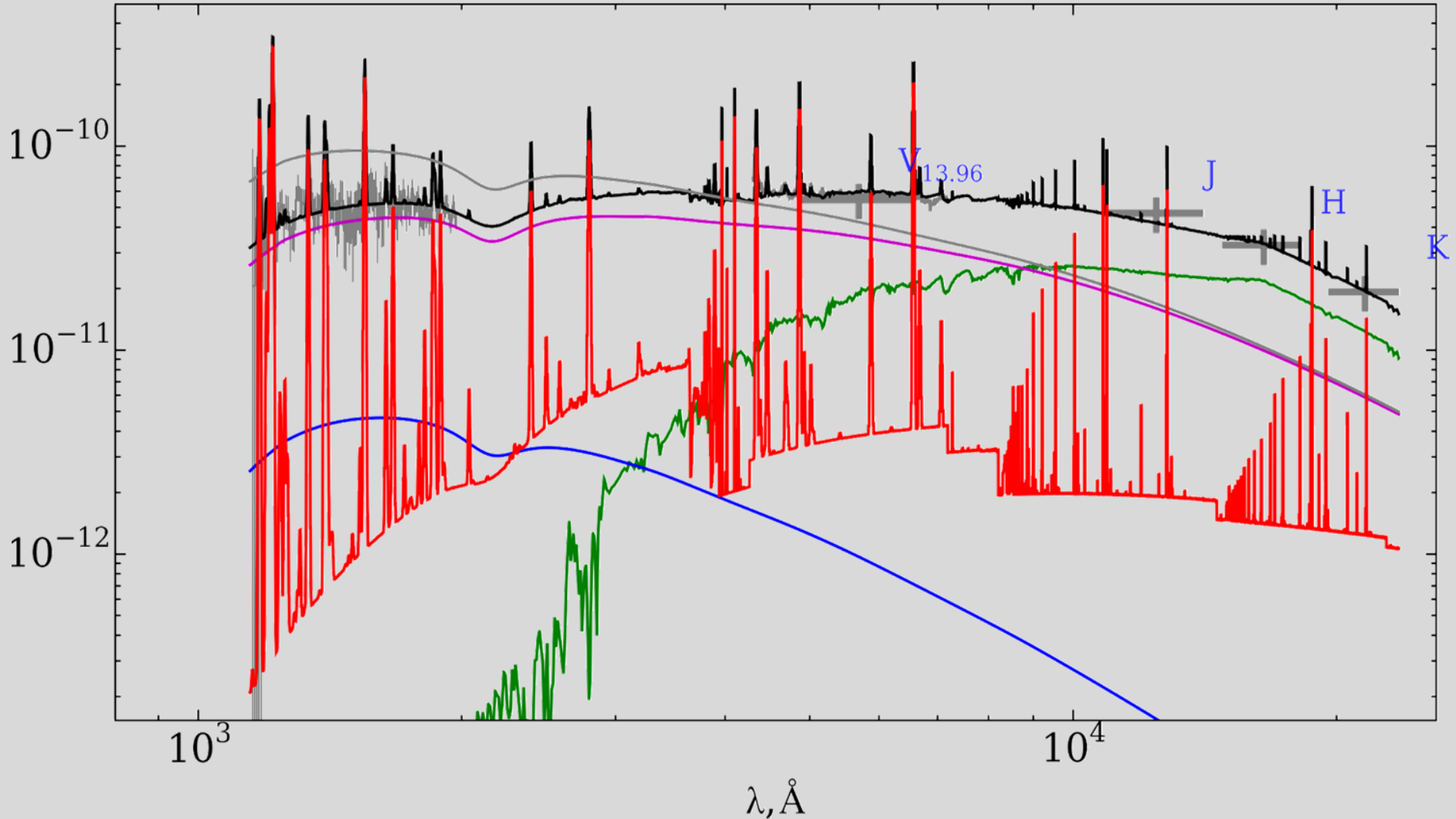
Broadband energy spectrum of the HL Cma during the outburst is typical for CVs



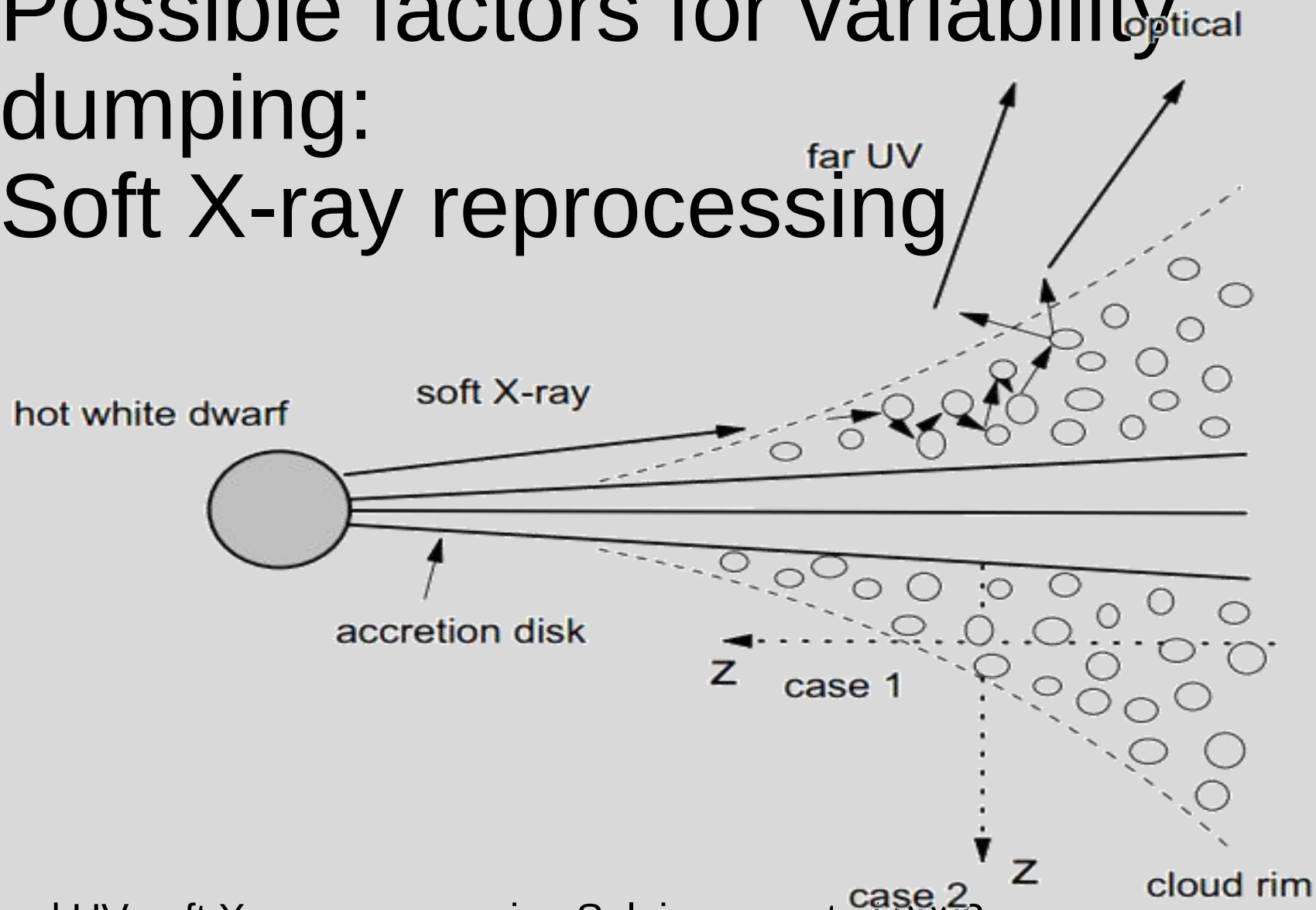
Difference from usual CVs: optically thick disk extends to the WD surface



Spectral model with decreasing dotM

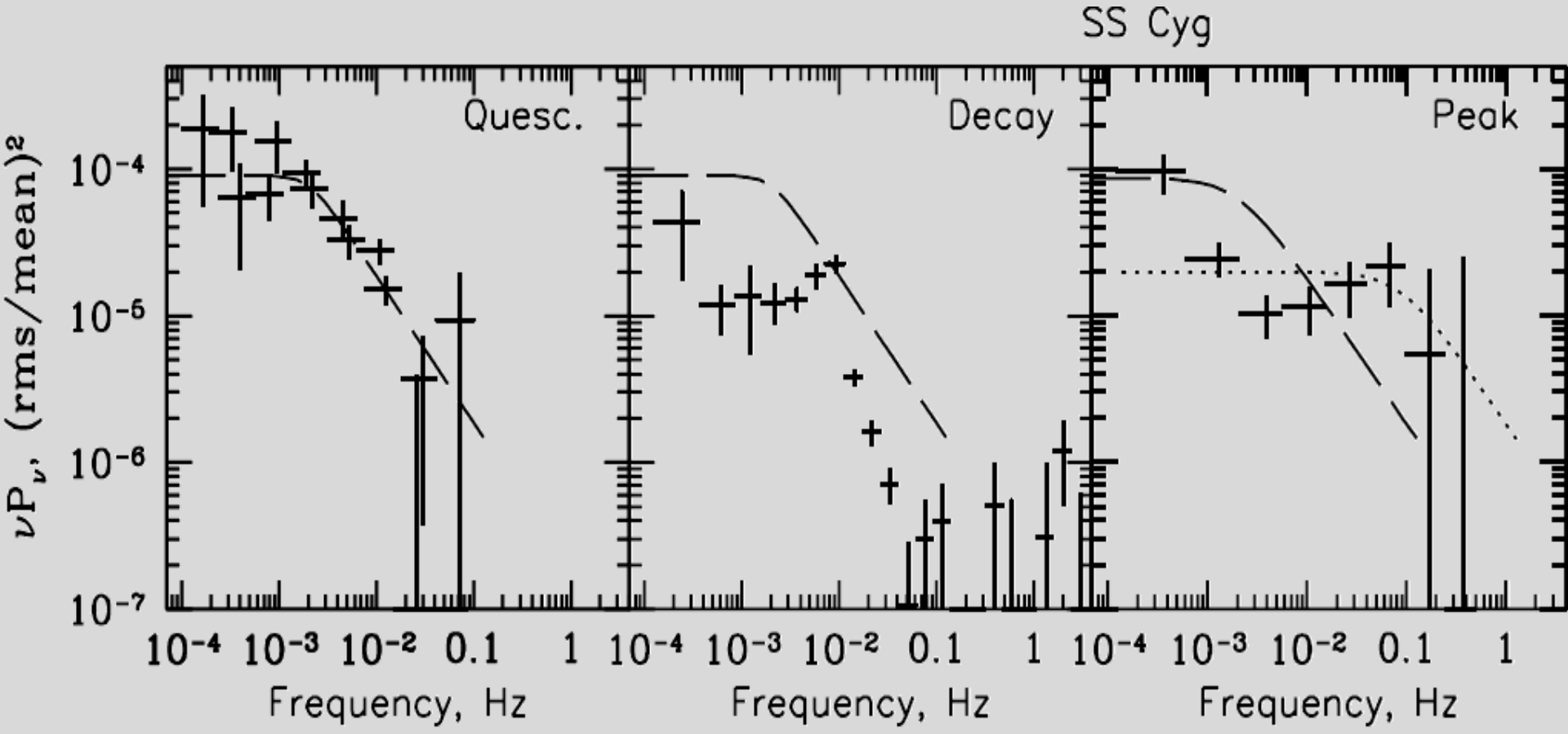


Possible factors for variability dumping:
Soft X-ray reprocessing



Hard UV soft X-ray reprocessing Suleimanov et.al 2003
X-ray for gamma ray reprocessing Cominsky 1987

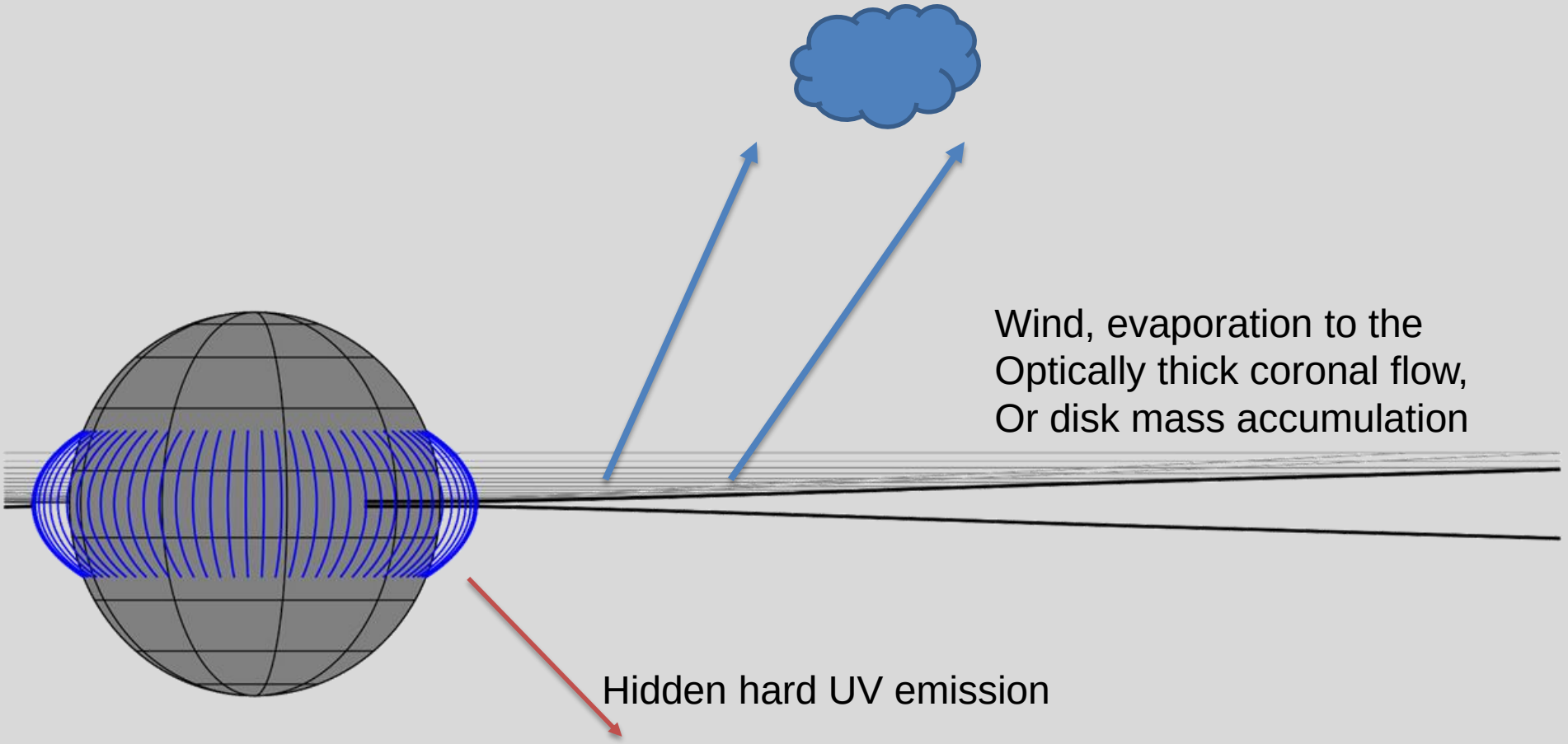
Power spectrum reprocessing dumping model contradicts with SS Cyg observations



Revnivtsev et.al 2012

HL CMa:

2-nd model: variability dumping due to the optically thick disk mass loss



HL CMa – unique CVs, with highest accretion rate in the quiescence state