



# *Astronomy Department*

## *University of Washington*

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Dear Thesis Committee:

I have read the Thesis of Mr. Jan Kara and find it to be an appropriate and very interesting research work. The topic chosen (systems near the edge of the critical mass accretion rate between stable and unstable cataclysmic variables) is one that has not received much attention in the past and this study has remedied that lack. The 4 objects chosen for detailed study represent an optimum selection, one in the period gap, another the only eclipsing Z Cam star, the third a system with mass turnoff and lastly, one that bridges short and long orbital periods. The techniques that were used by Mr. Kara to analyze these objects are state of the art and produced new information on all four objects.

The main new results that I found most interesting include the presence of outflows that could be the driver behind the higher mass accretion rates for some of the systems, the change in behavior of CzeV404 in the extended data that showed its superoutbursts had stopped, the low white dwarf temperature in SDSS1544+25 and the presence of dips before eclipses that could be due to a thick mass transfer stream.

The form of the Thesis that incorporates a general introduction and conclusion with already and soon-to-be published papers is a common approach in the present day. Thus, overall I find this Thesis is certainly adequate for a PhD degree and commend Mr. Kara for his work.

I would have 3 questions if I were present at his defense:

- 1) In section 1.1.6 he states that some classes are physically distinct and mentions classical novae that show DN outbursts. How does this fit in with the current paradigm that all CVs are the same object, just undergoing different stages i.e. a nova then becomes a NL, then a DN until it accumulates enough mass to undergo another nova?
- 2) In section 1.2.2, some theories are presented to explain the lack of low mass white dwarfs in CVs. Is another theory that low mass white dwarfs merge in the CE phase, thus being removed from the population of CVs also feasible?
- 3) A reason for the lack of SOBs in the extended data on CzeV404 was given as a decrease in the mass transfer rate. However, the system looks even brighter during that time in Fig. 3.1. Would you not expect the system to be somewhat fainter if the accretion is lower?

Regards,

Professor Paula Szkody  
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