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Ústav teoretické fyziky a astrofyziky

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Dear Prof. Mikulášek,

I have read Daniela Korčáková's habilitation thesis and I am happy to report that I have found it to be an excellent summary of the existing knowledge on FS CMa stars, to which Korcakova's herself has made several very important contributions.

Despite these stars have been known for a long while, the extreme physical conditions, the overlapping observational characteristics with other types of stars, the fact that they are time variable, and the limited data available, have precluded us from having a complete picture about their nature.

With the series of papers on these stars led by Korčáková, or with her as second author, the very same ones summarized in her habilitation thesis, the situation has improved significantly. These studies have secured new data or compiled them from existing sources, and analyzed them in a homogeneous fashion. The most recent contribution on the first detection of kG magnetic fields in one of the members of the class. This important discovery provides solid support to one of the possible formation scenarios in which this type of objects come from the merger of two stars.

FS CMa are not part of one of the main stream topics in astronomy, and they are truly complex objects. These are two practical reasons to stay away from them, and thus the

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modest body of literature on the subject. Korčáková has proven to be very brave in tackling this subject. She is equipped with the right tools, model atmospheres and radiative transfer codes, including departures from Local Thermodynamical Equilibrium, as necessary to make progress on this difficult topic.

One question I have is related to the modeling of the spectra in the most recent (2022) A&A paper. It is apparent the analysis presented is based on generic pre-computed synthetic spectra such as those in the POLLUX database, the Tlusty grids, or the AMBRE collection. Would it be possible/beneficial to perform a more detailed study based on NLTE atmospheres and radiative transfer calculations customized for each target? Would (fully consistent) models considering expanding atmospheres improve the agreement with the data? Another question is whether there has been any successful attempts to model the iron curtain visible for some of the targets in the UV observations.

Since the habilitation thesis is a compendium of previously published (or in press) papers, it is not surprising that the check on plagiarism reveals significant overlap with the literature. It is clear from Korčáková's leading role on most of her papers that her contributions to the published studies are major ones.

In summary, I consider the work behind this thesis to be one of excellent quality, as expected for a habilitation thesis at a major university, and hope to see Korčáková's work to continue in the future to further clarify the nature of FS CMa stars.

Sincerely yours,

Dr. Carlos Allende Prieto