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***Subject: Ján Šubjak's PhD thesis – supervisors report***

To whom it may concern,

I am writing this report as a supervisor of Ján Šubjak's PhD thesis work. Ján started to work on the detection of substellar companions from the TESS light curves. He promptly learned how to reduce the spectroscopic data. He took initiative and he was offered a lead authorship for the paper reporting on the first transiting brown dwarf from the TESS space mission (Subjak et al. 2020 - 2020AJ....159..151S). The paper was Jan's first publication in high impact, peer reviewed journal and after only 2 years it has almost 30 citations. During his work on the paper, Ján basically led and coordinated a large international team. Immediately after the successful publication, Ján started to work on another project focussing directly on substellar objects in wide brown dwarf companion systems after a visit at the IAC in Tenerife as part of the ERASMUS+ European programme. Ján was closely working with Dr. Nicolas Lodieu who became his co-supervisor and with whom I consulted this report. The paper was currently recommended for publication in A&A journal by the referee (Šubjak et al 2022b – paper available in the thesis). Ján's third first author paper was describing a discovery of a youngest hot Saturn-like exoplanet TOI-1268b which was published only a few months ago in A&A (Šubjak et al 2022a – 2022A&A...662A.107S). These papers presented above are the foundation of Ján's PhD thesis with a title: „*Photometric and spectroscopic characoterization of subsstellar companions to stars*“ .

The topic of the thesis is very contemporary and it includes a very new and original research performed by Ján Šubjak. The thesis is written in a cumulative form, where introductory parts are presented as a preface to each of the papers mentioned above. The thesis consists of 6 chapters presenting three papers – Šubjak et al. 2020, Šubjak et al. 2022a and Šubjak et al 2022b. The introductory part summarizes state of the art of the research field, it describes the methods used in the thesis and it introduces the importance of tidal interactions for the evolution of stellar and substellar systems. Furthermore, the effect of wide stellar companions on the evolution of planetary systems are discussed. As

the TOI-503b is a brown dwarf with an Am star host which stellar type is usually known to be in binaries, the system is very interesting itself. A brown dwarf orbiting an Am star was the first of its kind with only some planetary systems orbiting Am stars. Therefore, Ján proposes that the brown dwarf is influencing the evolution of the “single” Am star system. Ján is keen on pursuing this research topic looking at radial velocity variations of a large(r) sample of Am star to shed light on their evolution.

Furthermore, Ján‘s investigation of systems with substellar companions in wide brown dwarf/stellar systems delivers an interesting own distribution of eccentrities. Therefore, Ján proposes a further program to observe similar systems and firmly confirm the peculiar eccentricities distribution.

Besides the first author papers, Ján is a co-author of another 16 publications in peer reviewed journals (including the three papers which are subject of the thesis) describing detection and characterization of new planets. One of the publications is a detection of a new Mars-sized planet published in Science (Lam et al. 2021 with Šubjak - .2021Sci...374.1271L). Ján‘s h-index is 8, which I believe is a very good value for his career stage. Ján was also enrolled in the KESPRINT consortium, which is an international consortium of researchers following-up and characterizaing planets detected by space missions such as CoRoT, Kepler and TESS. Furthermore, Ján is participating actively in the PLATOSpec project led by myself. Ján contributes with the data reduction knowledge for the future pipeline. Ján also obtain his own funding from the Charles University graduates grants scheme.

I disucssed this report with Dr. Nicolas Lodieu who serves as Ján‘s co-supervisor. We agreed on the fact, that Ján clearly demonstrated that he is capable of conducting his own and original research work which results in high impact publications and overall community approval. I can confirm that Ján was working already during his last year of PhD studies on a comparable level to a postdoc researcher. He is very autonomous and enthusiastic and he looks for his own new and original projects as well as funding for a future postdoc position.  Therefore, based on above described and also based on my discussions with Dr. Lodieu, I strongly recommend the award of the PhD degree to Mgr. Ján Šubjak after his successful thesis defense.

Yours sincerely,

Dr. Petr Kabáth
Head of Exoplanetary Research Group