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Dear Prof Webb,

I am delighted to write this letter to express my strongest support for Dr Norman Khan in his application for a postdoctoral position working with you at IRAP. Norman was my PhD student from 2018-2022 working within the DISCnet centre for Doctoral training (CDT). The CDT provided Norman with a broad range of data science training (Big Data, HPC/GPU coding, machine learning and statistical inference) and a period of 6 months within industry.

Norman's PhD project involved performing novel and detailed population analyses of ultraluminous X-ray sources (ULXs), making use of the skills he developed within the CDT. In his first paper, Norman used the outputs from the population synthesis code STARTRACK and the numerical code ULXLC to predict the effect of precession on the observed population of ULXs, and how the numbers detected by eRASS might permit insights into the underlying demographic – a major challenge in the field. In his second (now accepted) paper, Norman utilised the joint UV/X-ray data from Swift to explore whether correlations (or anti-correlations) were present in the very large datasets of a large number of ULXs. The results have been compared to theoretical predictions for the UV emission coming from the outer photosphere of the wind, irradiation of the companion star or of the outer disc. Both of these papers are a testament to Norman's data-driven approach and formidable coding skills.

Norman is one of the most polite and hard-working postgraduate students I have had the pleasure of supervising. The pandemic presented a significant challenge (especially for PhD students) and I believe Norman would have published considerably more had lockdown not occurred. Importantly, Norman is extremely diligent and takes onboard advice, allowing progress to be made in a timely manner. I have no doubt he will continue to develop into an excellent researcher and make valuable contributions to the field and within the community at IRAP.

I will close by saying that I would hire Norman had I had funding to offer as I firmly believe he has a great deal of talent waiting to be tapped. Should you have any further queries, please do not hesitate to contact me.

Warmest regards,



Dr Matthew Middleton
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Director of the STAG Research Centre
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