

Letter of Recommendation

Oxford, 5 Jan 2023

I was requested to provide a Letter of Recommendation for my student Abhinav Nandwani. I have known Abhinav since the fall of year 2022 when we started working on our research project. The project is related to X-ray pulsars - accreting strongly magnetised neutron stars in close binary systems. Our task is to understand the conditions under which a shock wave can arise above the surface of a neutron star due to the high accretion rate from the companion star and the associated extreme radiation pressure. This problem has been actively discussed by the scientific community for years. Its solution is essential for the interpretation of data from the X-ray polarimeter IXPE launched by NASA a year ago.

The project is quite complicated, especially for a school student. It requires good knowledge of math and physics and the ability to prepare and test large computer codes. Abhinav was very quickly able to get involved in the task at hand. He learned well and quickly the fundamental aspects of high-energy astrophysics and neutron star physics necessary to solve the problem. I can conclude that he is able to analyse the problem, and look for and find interesting approaches to the solution. As a high school student, he has a very good command of the mathematical apparatus and understands very well different branches of physics. Abhinav is able to code Python effectively and implement his code solutions to physical problems. Several times he suggested interesting and successful steps in solving our problem. I especially like the fact that he tries to really understand the problem in depth and has worked extensively with the literature on his own. Thanks to Abhinav's activity, we have made progress in our project. Now we are preparing a paper for MNRAS based on our research.

Abhinav seems like a very motivated student. I am happy that I am working with him and consider him a colleague. I think he will have a successful career in the field he chooses and a bright future. Last but not least, Abhinav is an intelligent and pleasant person. I am happy to recommend him.

Sincerely yours,



Dr. Alexander Mushtukov
Stephen Hawking fellow
Astrophysics, Department of Physics, Uni. of Oxford
Denys Wilkinson Building
Oxford OX1 3RH, UK

E-mail: alexander.mushtukov@physics.ox.ac.uk
Phone: +44(0)7341413549
URL: www.mushtukov.com