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To Whom It May Concern,

I am a PhD physics student at Arizona State University (ASU). I am currently working with Kevin Schmidt using quantum Monte Carlo (QMC) methods to solve many body problems. Currently I am working on improving the variational trial wave function used to guide QMC simulations.

Before coming to ASU I completed my undergraduate degree at Brigham Young University working with Steven Turley on simulations and experiments in extreme ultraviolet optics (EUV). We compared reflection measurements of EUV light from thin films to calculations to determine the surface roughness of the thin film. We used geometrical optics and physical optics approximations as well direct calculations using Maxwell's equations to determine reflection for surfaces with known random roughness. While doing this research I learned how to program in a variety of languages, mostly Fortran. I also began to learn about supercomputing and high performance computing.

Before coming to ASU I didn't have much experience in nuclear physics or QMC methods. Though I have been learning a great deal in regards to both, participating in this summer school program would fill in many gaps in my understanding that would otherwise take much longer to fill. I have already been using programs written by my predecessors to perform variational and diffusion Monte Carlo simulations of nuclei and nuclear matter. I am working to include additional two-body correlations into the trial wave function, which should improve the accuracy and statistics of our simulations. With these changes I have made to the code I am doing simulations for a variety of systems with the intent of publishing our results when I am done. However, I have not yet had the chance to understand some of the inner working of the QMC simulation itself. Better understanding the simulations would help me to edit the code more efficiently toward our end goal.

My current work improving the trial wave function for QMC simulations in nuclear physics would be enhanced by participating in the TALENT School on Nuclear Quantum Monte Carlo Methods. It would be a very effective way to gain the knowledge I need to succeed in this field. I would need local support for this summer school.

Sincerely,

Cody Petrie