Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Very Good

Explanation to Applicant

Strengths: The research proposed will simulate extreme precision radial velocity spectroscopic observations of Earth-mass exoplanets to determine the optimal spectral resolution for the mitigation of the deleterious systematic effects introduced by tellurics and stellar activity to observations. This work will strongly support exoplanet research. A detailed one-year plan is presented, with some discussion of the directions the research could take in the following years of graduate school. The applicant and colleagues and advisors are well qualified to conduct the research, and resources exist to pursue the research. Applicant has 3 conference presentations, 4 co-authored publications, and a first-author publication in reparation at the time f the application. These result from her work in precise RV measurements at GMU. She will continue her work at GMU. The applicant has worked to support herself throughout undergraduate college, after overcoming a disadvantaged academic background. Weaknesses: The discussion of the research direction after the first year is thin.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Excellent

Explanation to Applicant

Strengths: The applicant comes from a disadvantaged background with the need to work to support herself academically. She has embraced public communication to support science education, and also to support the inclusion of women and minorities in a physics career. She is the co-founder and President of a GMU student-led organization, Spectrum, which aims to provide resources, mentorship, and educational opportunities to women and minorities to increase retention and a stronger connection to physics identity. She plans to continue this work. She is also a co-writer of the GMU Physics and Astronomy Department Code of Professional Conduct, which laid a basis for equity for all students, regardless of race, gender, sexual orientation, or research concentration. Weaknesses: None noted.

Summary Comments

This proposal details a project to advance the precision measurements of stellar RVs to detect exoplanets, necessary to advance the accuracy of such detections.

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Excellent

Explanation to Applicant

Strengths: The applicant has shown good initiative in all aspects of the project: observing, modeling and analyzing, and presenting the finished results. The results will be a valuable resource for others studying exoplanets and needing to account for telluric absorption. The academic record has some ups and downs, which might be taken as a weakness. However, she worked full-time as a student while putting herself through school. Both the applicant and one of her letters of reference address this. Her final grades and her excellence both in research and outreach allay any concern.

Broader Impacts Criterion

Overall Assessment of Broader Impacts
Excellent

Explanation to Applicant
The applicant has participated in "standard" outreach activities, such as being a peer tutor and mentor. She was featured in the "STEM in 30" program. But she has gone beyond, as a co-author of the the George Mason Code of Professional Conduct. She is also the founder and president of SPECTRUM, a student-led program working for equity and diversity in STEM at GMU. The range of her activities suggest that she will be a leader in making astronomy a more diverse field. I see no weaknesses here.

Summary Comments
The applicant has demonstrated strength in both Intellectual Merit and Broader Impacts and fully deserves the GRF.

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit
Very Good

Explanation to Applicant
Proposal to study the optimal spectral resolution and exposure time for precision radial velocity measurements. Sources of systematic errors include telluric lines and host stellar activity.

Broader Impacts Criterion

Overall Assessment of Broader Impacts
Excellent

Explanation to Applicant
The applicant is a huge advocate for equity and diversity in STEM. Co-founder of a group called Spectrum to help retention of women and URM.

Summary Comments
A strong applicant with a good research proposal and broader impacts plan. An excellent candidate for the NSF GRFP.