Intellectual Merit Criterion

Overall Assessment of Intellectual Merit
Excellent

Explanation to Applicant
STRENGTHS: The modeling of lowest mass stars is still very much an open problem and both the need for the research and the proposed methodology are clearly and concisely explained. The fact that the (preliminary) data exists makes success a plausible outcome for this project. WEAKNESSES: The necessary spectroscopic resolution to identify the Zeeman split must be quite high (>10.000). It appears likely that follow-up observations will need to be taken but the candidate is well situated for these. The target grouping is well motivated but some older M-dwarfs may need to be observed for an additional age point.

Broader Impacts Criterion

Overall Assessment of Broader Impacts
Excellent

Explanation to Applicant
STRENGTHS: the background and proposed activities of the candidates make this a strong proposal. The candidate proposes to use her experiences to include others in science with targeted and well-though through projects and help resolve the tension around the use of Mauna Kea. The proposed HI-STAR class activities are advanced and detailed. WEAKNESSES: community engagement like the one needed for the Mauna Kea use may take a longer-term commitment from more than a single graduate student. The combination of the HI-STAR program and the willingness to tackle this difficult issue make this a winning component in this proposal.

Summary Comments
The proposed work is very well thought out with a clear path to completion and success. The data is in hand for the most part making success very likely. The broader impact is equally well thought out and compelling.

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit
Very Good

Explanation to Applicant
Strengths: The applicant has an extensive research and publication record. The proposed research program is very clear and well developed, to measure magnetic fields in M dwarf stars using the Zeeman effect. The proposed research can be carried out either with archival data or already approved observing time available to the applicant.

Broader Impacts Criterion

Overall Assessment of Broader Impacts
Excellent

Explanation to Applicant
Strengths: The applicant has a strong commitment to, and extensive experience with, increasing access to astronomy and STEM education for underserved and underrepresented high school students. The applicant was a participant in the QuestBridge National College Match program, and is now active in outreach and recruitment for this program, particularly aimed at eligible

high school students, especially those of Native Hawaiian and Pacific Islander descent. The applicant plans to continue these activities as part of the GRFP. The applicant has experience mentoring high school students in research, having mentored 2 students as part of the HI-STAR program. The applicant is on their department's JEDI committee, developing new initiatives and supported by NSF ADVANCE The applicant proposed to continue their extensive outreach and mentoring of high school students, through QuestBridge, HI-STAR and Honua Scholars, as well as public outreach in Hawaii.

Summary Comments

The applicant proposes a potentially transformative program of outreach, mentoring, and support of high school students from underserved and underrepresented backgrounds, in particular Native Hawaiians and Pacific Islanders. The proposed research program of measuring magnetic fields in young M dwarfs using the Zeeman effect, is important, well-planned, and well-supported research, and the applicant is well qualified and well prepared to carry it out.

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Very Good

Explanation to Applicant

The applicant found a career in astronomy after trying out a career in medicine. The choice of astronomy was well-motivated and deliberate. The transcript and past research experiences demonstrate sufficient preparation for a PhD program. The research proposal is sound, and the physical motivation is well presented. It could be improved even further by discussing how the proposed observations of magnetic fields relate back to the fundamental questions, such as validation of the dynamo theory.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Very Good

Explanation to Applicant

The applicant had a difficult and non-linear career trajectory but has succeeded nonetheless. The application indicates a passion for giving back, as demonstrated by mentoring with the HI-STAR program. The broader impacts in the research proposal also focuses on HI-STAR, which is admirable. The ways I could think to improve the broader impacts are to propose something beyond more HI-STAR mentoring and to present more specifics about the plan for astronomy outreach in Hawaii.

Summary Comments

The applicant has earned preparation for a PhD program through hard work and perseverance. The research proposal addresses a important question about magnetic activity in M dwarfs. The application could have been stronger with more specifics about the research plan.