Research Proposal Referee Feedback Form
Astronomy 3Y03
Winter 2017

Title of Research Proposal: Characterizing the Photometric Variability and Accretion disk of V346 Normae
Author of Research Proposal: Ian Fare

1. Does the proposal conform to the presentation standards (e.g. 3 pages in ApJ format/5 pages in single column format, no more than 1 page of references)? If not, please comment.

   The proposal is written in ApJ format and does conform to the standard of 3 pages, with no more than 1 page of references. The proposal is missing a Literature Review and Impact section, but averaging the lengths of the other sections, even with their inclusion the proposal should still meet the presentation standards.

2. Is the abstract understandable to a non-expert audience and sufficiently informative? Provide details to support your assessment.

   There is no formal section titled Abstract so this question will be difficult to answer. I would suggest that the beginning of the abstract be a brief introduction to the star, similar to the first few lines in "Recent Progress" (including that the star in question is an FU Orionis class). Then include that the purpose of the proposal is to observe V346 Normae as it enters its second outburst so that inferences could be made about the state of the accretion disk during and before the outburst (Furthering our understanding of the processes responsible for outbursts of FU Orion stars). Also include that request will be made to AAVSO and the mount john university observatory to make measurements. Also since these star are pre-main sequence this research will provide insight into the evolution of young stars, and the possible planetary systems involved.

3. Do you understand what object(s) the author is describing, and what we understand about them so far? Provide suggestions to improve the sections on recent progress and the literature review. Have the authors made enough use of the primary literature?

   I was confused by the terms "flickering" and "variability" as they were used interchangeably, I noticed that there use was stated later in the proposal, clarify it earlier to avoid the confusion. Also he should specify the connection between the colour variability and the temperature of a star. I know the connection between the colour of a star and the temperature, however I am unsure of the connection between photometric variation and the temperature. I was confused when it says that observations that noticed a

flickering source which is 6000K is support for the optically thick accretion disk model, when earlier the issue with the steady state model was the lack of flickering among hotter stars (6500-7000K), explain why the 6000K source supports the model. Also the proposal frequently references points along the disk as "annulus" while not specifying the width of the annulus (The cited paper references specific radii along the disk so this may just be a terminology error). Focus more on explaining what recent research is specifically related to the proposal, it seems like the proposal involves gathering photometric data to support the optically thick accretion disk model, so focus on that. Lastly, due to their early mention, I assume there is some connection between the outbursts and the photometric variation; so mention it (if not it seems pointless to mention). There is also no Literature review section, (I, like the author, am unsure of the difference between the two sections) I would put literature that is not as directly relevant as the main paper (in this case the Keyon et al. paper) but still holds significance to the proposal.

4. Do you understand the objective of the proposed research (observation or calculation) and the methodology? Has the author been specific about what (s)he will do to answer the research question? Provide suggestions to improve these sections.

   I understand that the purpose of the report is to gather data on the photometric variability of V346 Normae, to constrain the processes that underlie the outbursts of FU Orionis stars. The author intends make a request to the AAVSO and the Mount John University Observatory to observe the star, however I am unsure of the timescale as it seems like an open ended request, as the end of the observations are not specified (if that is the purpose specify that). Similar to the previous section I am confused as to the purpose of the observations. Both this section and the previous, the author should emphasize a specific result or answer that the proposal is looking for. If the purpose is to provide evidence for the optically thick accretion disk model, explicitly state that. The paper states the methodology will model the long-term increase in brightness, it seems to be more of an observation of the increase in brightness (rather than a model of it). If there is a connection with one of the models described in the "recent progress section", go into more detail about their connection/what these observations will contribute.

5. Has the author described the anticipated significance of the work in a convincing way? Provide suggestions to improve this section.

   No there is no impact/significance section. The proposal emphasize that this research will provide useful data in understanding the evolution of FU Orionis class star accretion disks. From here the significance of the proposal can go in many directions but from what is written in the "recent progress" section it seems the author wants to emphasize the impact on planetary

science. For example constraining the evolution of a pre-main sequence stars accretion disk (which dictates planetary system formation) can be connected to the search for earth-like planets other than our own. However as long as this section convincingly identifies the significance of this work, it is up to the author's discretion as to what the significance is.

6. Has the author clearly identified and appropriately cited work that is not their own? If not, provide clear examples where additional citations are warranted.

   The author clearly cited the work that was not their own, including both a reference section and in-text citations. I have no constructive criticism for this section, only keep up the good work.