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Ernest Rutherford Fellowships Peer Review

STFC Reference: ST/X003833/1

Document Status: With Council

Ernest Rutherford Fellowships 2022

Applicant Details

Applicant	Dr Evan Henry Anders	Organisation	University of Exeter

Title of Research Project

Improved magnetoconvection models for precision astrophysics

Review Information

Response Due Date	02/11/2022	Reviewer Reference:	075862621

Research Council Contact Details

STFC Administration Contact:	Email:	Telephone:

Overall Assessment

Please include justification for the scores given above and assess against the criteria stated in the reviewer guidance.

Please include comments on: (1) the excellence of the research achievements of the applicant; (2) the potential of the applicant to lead their research discipline; (3) the capability to maximise the potential of others and the ability to be, or become, a clear communicator and disseminator of knowledge; (4) the excellence, timeliness, feasibility, distinctive vision and importance of the proposed research; (5) strategic value within the STFC programme.

This information will be available in the feedback given to the applicant.

The applicant is a world-leading expert in convection simulations. They have an excellent publication record given their career stage. They have been involved a very large number of publications this year, including some which were led by students the applicant has mentored (although not all yet accepted). The applicant is becoming recognised as a world leader, which has led to their leadership of a book chapter, involvement in a Kavli programme and invitations to give seminars.

The applicant has obtained a number of early-career personal fellowships, demonstrating their potential to obtain funding. Are there any plans to use this fellowship as a platform to build a team by applying for future funding?

The applicant has an admirable track-record of making their codes open access and will continue to do so in this fellowship. The importance and time commitment of this should not be underestimated. The applicant has also actively sought opportunities to mentor students and this has resulted in papers. They are also very active in terms of outreach activities - backing up their dedication to open access with interesting output from their research that can be used for public engagements including visualisation and the sonification of data, which has the potential to be huge in terms of inclusivity.

The research proposal is interesting and novel in it's approach to tackling one of the big outstanding issues in stellar modelling - convection! By allowing the convection to overshoot r=0 the applicant is addressing one of the limitations of current models and so the work will undoubtedly lead to results that are interesting to the community. The proposal is well thought out, detailed and directly building on the skills of the applicant. I just have a couple of queries regarding Focus III - convective blueshift. Will the outputs of your approximations be directly comparable to the full radiative transfer. The convective blueshift work is interesting in its own right but, since the application mentions exoplanet surveys, I wonder this work will be incorporated into such exoplanet surveys. Will this work enable the convective signature to be removed from the data or will is just provide estimates of the typical magnitude of the convective blueshift expected? If it is the latter, how useful is this for exoplanet surveys?