

Review #1:

This is a new request for 7 Million on Kraken to study astrophysical flows by a large team of researchers (5 PIs including several early career scientists) and supported by a large number of awards (5, including 1 NSF award). They made use of a start-up grant to analyze the performance of their code, astroBEAR, which is adaptive mesh, and the proposing team is the same as the development team of this code. Provided is the strong scaling for the resolution they plan to run (128 + 4 levels AMR) on the target resource (Kraken) and it demonstrated good scalability. They make the point that the AMR code is 100x faster than the equivalent computation that has fixed grid resolution so their strategy of using AMR is very helpful for this research. Overall a good proposal. There were a few shortcomings. I would have liked to have also seen a weak scaling for that resolution, or a smaller size, as well as some justification as to why they chose the resolution they did. They do not provide information about the experience of their team, but it seems they have expertise covering HPC aspects and consider code optimization. They also didn't mention whether they have local computing resources. They don't describe what beta is, or how the various angles lead to different results, why they chose the angles they did, and how that will lead to a successful investigation. They mention they will save 150 frames of each run, but it is not clear whether that is only a subsample of the total frames that will be run. They do not give units for the runtime in Fig 3, and don't give walltime for how long a frame takes but they simply say it takes 6000 SUs. On balance, I would not recommend full allocation, but they have made a case for getting an award of about 50% of their request.

Review #2:

This is a good proposal with all of the relevant information present. However, I could not find any previous usage of the group, except for some roaming allocation. The code is appropriate for the proposed computations and the scaling is fine. Because of the short track record I'm hesitant to recommend full funding. I recommend to grant half of the request. Kraken: 3.5 MSU Storage: 2500