

Addendum #5 to RFP # MJ-2692-1044666

From Potential Subcontractors emails from 10/6/20 thru 10/12/20:

Q1: Will the synthetic image set and problem definition be compatible with ideas, which seek to solve the detection and spectral estimation problem per-system, for however many repeat images of the same system are taken? For example if we have N images captured per a single planetary system, is the goal to perform planetary detection and spectral estimation per-image? Or is the goal to use the set of images to perform detection and estimation on one set of parameters per planetary system? My assumption is the latter, that we want to use N repeat images per system to estimate underlying properties of a given system across multiple images.(for example we would assume that the number of planets and their underlying orbital and spectral properties are constant across repeat images.) If that is the correct assumption, a related question is whether we can assume that some minimal amount of planetary motion will be observed for a given system,(i.e. a significant fraction of an orbit) or will there be scenarios with repeat images per system but in a small time window such that motion is negligible? I am thinking of an approach which could exploit observed planetary motion to better estimate underlying system parameters, and give more sensitive detections. If a submitted proposal used a technical approach which required some minimum planetary motion to work, would that be considered for award? Or does a proposed algorithmic approach also need to handle the special case where either there is a single image of a system, or a sequences of images in a short period of time such that no planetary motion is observed?

A1: The observational scenarios simulated by the data challenge will approximately correspond to the concepts put forward by Starshade Rendezvous with Roman¹ and HabEx². For example, each star-planet system considered may receive two observations, and the orbital phases of the planets may be different between the two observations. Each observation may entail a long integration by coadding multiple images consecutively. While we currently do not envision the orbital motion of the planets during each observation to result in a substantial effect in the coadded images, we welcome a discussion of this effect and would be willing to explore and potentially incorporate this effect in a subset of simulations that correspond to very long integrations.

Q2: Will the synthetic images generated for the data challenge be generated using the SISTER project at Caltech? Or if not, are the simulated images generated by the sister project at least qualitatively representative of what the synthetic images for the data challenge may look like? It is very helpful for image processing to

¹ <https://smd-prod.s3.amazonaws.com/science-red/s3fs-public/atoms/files/Starshade2.pdf>

² <https://www.jpl.nasa.gov/habex/pdf/HabEx-Final-Report-Public-Release.pdf>

actually look at some images while coming up with a concept for an approach so, are the generated SISTER images at least qualitatively relevant?

A2: Yes, the images will be generated using the Starshade Imaging Simulation Toolkit for Exoplanet Reconnaissance (SISTER)³.

Q3: Regarding the cost proposal. I could not figure out the answer to this question by looking at any of the addendums. In the RFP under COST INSTRUCTIONS - 1.0 DATA SUBMITTAL – 1.2. There are two 1.2 sections where either cost information related to Paragraphs 2.0 and 3.0 must be submitted with the proposal, or after, and it's not clear to me which is the case for this RFP. E.g.

Case 1

Paragraphs 2.0 and 3.0, subsequent to the submission of your proposal, **if requested by the JPL Subcontract Manager**. This information must be received by JPL within (*) working days from the date of the request for the information to be further considered.

Case 2

You are required to provide the following information, and the information of Paragraphs 2.0 and 3.0, **with the submission of your proposal**.

My question is, for this particular RFP, do I need to submit information responding to paragraphs 2.0 and 3.0 with my proposal by 10/16/2020, or only if requested by the JPL Subcontract manager within (*) working days from the date of the request for the information?

A3: Per addendum #3, A1: A detailed budget is not required however; the proposals should include a dollar amount, which cannot exceed \$50,000. If a detailed budget will be submitted, use The Cost Elements Breakdown – Short Form (Attachment A-19) that is included in this RFP. You can submit a detailed budget with your proposal by 10/16/2020, if your institution requires it. If you do not submit a detailed budget and it is needed, the Subcontract Manager may request this information at a later time.

³ <http://sister.caltech.edu>