

Research Proposal

AST3100 Astrophysical Transients: Final Project (due: 2022 December 21)

Students will pick a transient of as-of-yet unknown origin (e.g., fast radio bursts, fast blue optical transients, extragalactic cosmic rays, high-energy neutrinos) or a gap in transient phase space and will write an observing/modeling/theoretical proposal for answering an interesting open question related to this. The students will present their proposals in class before the final write-up is due.

We'd like to keep the prompt a bit vague to give you maximal freedom for exploring your interests, so you can either write a proposal to ask for funding to build a new instrument or telescope (using existing technology), for observing time on a telescope, or for hiring someone to delve deeper into theoretical/simulation work. (To give a sense of the amount of ambition to aim for, think of maybe \$1,000,000, sufficient for a small instrument, about 10 nights at a major telescope, or about 3 postdocs for 3 years.) Please pick a topic that interests you in consultation with the instructors and reach out to the instructors to discuss your progress – we can give feedback while you work on this. The proposal can be something adjacent to your research but you cannot recycle a proposal you have written already for another purpose (on the other hand, if this final project comes in handy for some future proposal: great!).

The presentation should be maximum 15 minutes and there will be 10 minutes of time for questions by classmates and the instructors.

The research proposal should be maximum 4 pages with minimum 1-inch margins and an 11pt font. This includes figures and references.

What you'll be graded on are the following aspects:

- 35% – How well the proposal connects to the contents of the course (i.e., when was the transient phenomenon you're discussing first discovered and how? why is it interesting and how is it thought to work physically?);
- 35% – How realistic the proposal is (e.g., if you're proposing observations, do the expected rates given the exposure time make sense);
- 15% – The originality of your proposal;
- 15% – The style of the presentation/proposal.

The in-class presentations will be on Monday Dec 12 and count towards 10% of your final grade; the final project write-up is due at the end of the semester (Dec 21) and will count towards 30% of your final grade.