

Projects : The joys of proposal writing!

This class project gives you a chance to explore the concepts and technicalities of cosmology while, at the same time, getting a crash course in one of the most important skills that you need as a scientist — proposal writing!

Task 1 (due 29th Nov 2016) : Choose some interesting/unsolved problem that is related to the topics covered by this class, and write a research proposal as if you were applying for a two-year post-graduate fellowship to study that problem. Some guidelines/requirements for the proposal are as follows:

- Requirement : There is a strict page limit. At most, write **two pages of text plus another optional page of figures and/or references**. The review committee (see Task 2) will be instructed to ignore any additional pages.
- Requirement : Proposals must be emailed to me (chris@astro.umd.edu) as a single PDF document **no later than the beginning of class on Tuesday 29th Nov 2016**
- Requirement : Give your proposal a title and, instead of your real name, use a pseudo-name (maybe pick some obscure scientist from the past). There should be nothing in the proposal that identifies who you really are (this is important to keep the assessment of the proposals “blind”).
- Guideline : The proposal text should clearly and concisely introduce the basics of the problem that you’d like to study, starting from what is established/known and introducing the unsolved problem. Remember to appropriately reference any papers, books, websites etc. that you use. Then make a clear statement of the hypotheses that you’d like to explore, and the data/calculations/simulations that you would need to perform to complete these study. As part of this proposal, you may request that new data be taken by observatories of your choice (e.g., Hubble Space Telescope, Chandra X-ray Observatory etc.); the observations need to be specified in detail (objects, type of data requested [images/spectroscopy/lightcurves etc.]). Justify the two year timeframe of the study.
- Guideline : Remember that a huge amount of good science takes place in small steps — so you don’t need to propose to solve on a grand problem (e.g., completely determine the nature of dark energy) in order to have a good proposal. Indeed, if you proposal to solve a grand problem, you’d better make a good case that you have the tools to do it! You will also be well advised to make sure that the proposed scientific investigation is not too “fringe” (e.g. warp drive technology, or the interaction of dark energy and ghosts!).

Task 2 (before and in class on 6th Dec 2016) : Once the proposals are submitted, you will act as the proposal reviewers! I will split the class into two “committees”, and each of you will have to read and assess the proposals from the other half of the class. I will coordinate the process, distributing the appropriate proposals on the 30th November 2016. You then have a few days to read the 7 or 8 proposals that your committee will be reviewing. Your committee will meet during class on 6th December 2016, discussing your impression of the proposals and ranking them in order of merit.