

Instructions for preparation of the paper and presentation:

The candidate shall write a paper placing the chosen topic in its overall context and explaining the objectives and methods in a way that shows that he/she has understood them. The paper may be in the form of a review or a research proposal for a specific subject. In the case of a research proposal the emphasis should be on its context in the general research area and the overriding physical objectives. The candidacy paper must be typed and in the style of a journal article or preprint. It should be a well-referenced summary of the topic at the level, for example, of articles in *Physics Today*. The completed paper must be distributed to the committee members no less than one week before the examination. The paper should use Times New Roman or Computer Modern (LaTeX) font 11pt, or Arial or Palatino font 10 pt, with about 4 lines per vertical inch, with approximately 10-12 pages of text (5000-6000 words). Please put all figures after the body of text, followed by the references.

The presentation should be 20 minutes long. The candidate will be given a warning at 18 minutes, and in no case allowed to continue beyond 25 minutes.

Both paper and talk should have an overview, placing the general research area in context, a more detailed discussion of the specific research area and its place in the field, and finally a discussion of a more specific problem whose solution will advance the field. For example, in HX, the first third might outline the Standard Model and its deficiencies, the second third the general experimental approach, and the final third might be on specific channel and how it might help understand the issues with the Standard Model. In astro, the first third might outline the general problem of the expansion of the universe, the middle on means to determine the expansion, and the final third on particular measurements of supernovae.

In all cases, the oral exam may examine all basic physics/astronomy related to the topic, as well as specific issues related to proposed measurements, calculations, etc. You should be able to discuss anything mentioned in the text.