

General Procedures for the GSU Astronomy PhD Qualifying Exams

First Year Qualifying Exam

The first year qualifying exam is scheduled after final exams in the Spring Semester of the first year. The exact date, time, and location of the oral exam will be determined by the Graduate Director and astronomy faculty and will be communicated to the graduate students well in advance of the exam. This closed book exam typically consists of 100 multiple choice ASTR 1010-like questions and 100 multiple choice ASTR 1020-like questions; the questions may be from any resource, but will be at this level. The goal of this exam is to assess the student's comprehension of basic astronomy knowledge. Students may use a calculator. The values of less common astrophysical constants (e.g. the Gravitational Constant) will be provided as needed, but common ones will not (e.g. the speed of light). Students are given 6 hours to complete the exam.

A score of 80% or above is a passing score. A score between 70% and 80% is in the gray area and additional metrics such as a class performance and research accomplishments will be considered in evaluating the student's performance. A score below 70% is a failing score. The results of the first-year qualifying exam will be communicated individually to the graduate students by the Graduate Director within roughly one week.

Second Year Qualifying Exam

The second year qualifying exam is scheduled after final exams in the Spring Semester of the second year. The exact date, time, and location of the oral exam will be determined by the Graduate Director and astronomy faculty and will be communicated to the graduate students well in advance of the exam. This exam consists of three parts: a written research report describing the student's research accomplishments here at Georgia State, an oral research exam, and an oral academic exam (the latter two portions are administered together as the 'oral exam'). The goal of this exam is to assess the student's graduate-level comprehension of astronomy and astrophysics, and the student's potential for successfully conducting (over the next few years) the independent research required to complete a Ph.D. in Astronomy.

The written research report should be submitted electronically to the Graduate Director and the student's research adviser approximately 1 week prior to the oral exam; the exact date and time it is due will be communicated well in advance of the due date. The document is to be written solely by the student, but the student is encouraged to seek comments from their adviser. The document should include the following: (1) an abstract, (2) background information and a motivation and/or justification for the research, (3) an accurate and complete description of the analysis and results, (4) a discussion of the results, (5) a summary including potential future work, (6) any tables, figures with figure captions, and references that are appropriate for the work. The document should demonstrate effective scientific communication skills and be grammatically correct. The document should be prepared using the AASTeX Template for submissions to AAS Journals (single-spaced, 12-point font, 1-inch margins). The document should have between 4 and 10 pages of written text (figures, tables

and references are not included in this page count). The document should convey that significant research was accomplished by the student.

The oral research exam and the oral academic exam will both be administered during a 2.5 hour oral exam session. The audience for a student's oral exam is the examination committee, and will consist of the Graduate Director, the student's research adviser (assuming both are available) and a subset of the Astronomy Faculty (typically 5 faculty total).

The oral research exam will begin with a 30-minute presentation by the student that describes research conducted as a graduate student at GSU. During this, the student should demonstrate a good understanding of the scientific context of their research and the methods used in their research. The presentation should clearly distinguish work done by the student as opposed to work done by others. The presentation should convey that significant research was accomplished by the student. Students are encouraged to seek advice from their research adviser in preparing their presentation; the adviser will not prepare material for this presentation. Throughout the presentation and following the presentation, the student should expect questions from the examination committee.

The oral academic exam will consist of additional astronomy and astrophysics questions from the examination committee. A general understanding of topics from the Department's introductory astronomy courses (ASTR 1010, ASTR 1020) is expected. A more advanced understanding/mastery of material is expected for questions related to the student's area of research and for those graduate courses that the student has taken at GSU.

The second year qualifying exam will be graded out of 100 points. The written research report is worth 25 points, the oral research exam is worth 25 points, and the oral academic exam is worth 50 points. A combined score of 80% or above is a passing grade, a combined score between 70% and 80% is in the gray area and additional metrics such as class performance and research accomplishments will be considered in evaluating the student's performance. A combined score below 70% is a failing grade. A passing score (>80%) on the research oral exam must be attained, regardless of the combined score, in order to pass the exam.

In concordance with the GSU Graduate Catalog, "the examination may be repeated once following a minimum interval of six months either with the original committee or a duly constituted new committee. The examination must be passed at least one academic year prior to the conferral of the degree. The student who fails the examination for the second time will be subject to termination."

The results of the second year qualifying exams will be communicated individually to the graduate students by the Graduate Director within roughly one week.