Use of Physics GRE in Graduate Astronomy Programs

(Shardha Jogee, UT Austin Astronomy Department Chair)

(December 8, 2016)

Following the AAS council resolution (https://aas.org/governance/council-resolutions#GRE) adopted in January 2016, many departments have been evaluating whether/how to use Physics Subject Exam (PGRE) as part of the graduate admission process. In order to promote discussion between Department Chairs and facilitate coordinated changes in policy across departments for the greater benefit of the astronomical community, I sent an email survey to other department Chairs in early August 2016 asking which of the options below had been adopted by their department:

A) Require applicants to the graduate program to submit Physics GRE scores
B) Make it optional for applicants to the graduate program to submit Physics GRE scores
C) Eliminate Physics GRE from the graduate application process
D) Other (please specify)

The results of the survey, based on answers by Department Chairs or their delegates, were circulated at the Astronomy Department Chairs meeting in November 2016, where a detailed discussion of the use of the PGRE ensued. Several Chairs indicated their department were about to discuss the PGRE and subsequently emailed the decisions reached. The updated Table 1 shows the data as of December 8, 2016. While the table does not represent a statistically complete survey, the information it provides of the current landscape may still be useful. Department Chairs and AAS leadership can circulate this report and Table 1 to their colleagues to guide discussion. Below are some salient findings from Table 1:

- Of the 27 Astronomy or Astronomy/Physics graduate programs participating in the survey, 13 or ~48 % no longer require the PGRE as part the application to their graduate program. Of these 13 programs, 9 have made the PGRE optional and 4 have eliminated it. This decision to not require the PGRE was driven in large part by the AAS resolution and the acknowledgement that the PGRE does not strongly correlate with long-term success in research, imposes a large financial burden, and has a disproportionately large negative impact on under-represented groups.
- Some astronomy graduate programs opted to eliminate the PGRE, rather than make it optional, in order to limit unconscious bias against those not submitting PGRE scores and avoid the pitfalls of dealing with incomplete data.
- Several astronomy graduate programs that no longer require the PGRE still allow applicants to submit additional materials to demonstrate subject mastery or other qualifications they wish to convey.
- Many institutions requiring the PGRE do not apply any cutoff in PGRE score and give it a low weight in the admissions process.

Table 1 : Use of Physics GRE in Graduate Astronomy Programs (compiled by Shardha Jogee, UT Astronomy Department Chair)

Astronomy program	Physics GRE in Graduate Application				
	A Require	B Optional	C Eliminate	D Other	Comments
Univ. of Arizona/Astronomy		X			There is an optional field for the PGRE and applicants are informed they can leave it blank without being penalized.
Boston Univ.	X				
UC Berkeley	X				We do not/have never used cutoff scores.
UC Irvine	X				We do things via subgroups (Astronomy, Condensed Matter, Particle, etc.). We do require the PGRE, but most subgroups are now using PGRE as a kind of litmus test for students being prepared enough for their first year courses and chance of passing the qualifying exam.
UCLA	X				The PGRE plays a smaller role every year. Admissions committee is well aware that it does not correlate well with other measures of future academic success.
UC Santa Cruz		X			The PGRE is not required. It is only recommended. When available, we do not use any cutoff.
Case Western Reserve. Univ.		X			Some faculty wanted to see the PGRE score when available as one item of information; others consider it a form of disinformation and did NOT want to see it.
Columbia Univ.	X				No cutoff in either GRE or PGRE is used in our admissions process; all aspects of an application are considered in coming to a decision.
Georgia State Univ.			X		
Harvard Univ.	X				We require the Physics GRE, but we do not give it much weight. We are discussing whether to make it optional or eliminate it.
Univ. of Hawai'i	X				We use the PGRE as a minimum requirement (above bottom quartile).
Indiana Univ.		X			The PGRE is not required as per AAS recommendation. Students are not prohibited from submitting the scores if they want to.
Univ. of Kansas		X			Note that we are a Physics and Astronomy department that offers only a Physics Ph.D.
Univ. of Minnesota	X				While the PGRE is not perfect, and we do

					not use it as a sole metric, we do find that it provides valuable information about our applicants.
New Mexico State Univ.			X		
Northwestern Univ.	X				We have a new PhD in Astronomy and currently require the PGRE. Ongoing discussion to drop the PGRE requirement next year.
Penn State	X				
Princeton Univ.	X				Princeton still requires the PGRE, but does not use cutoff scores.
Rutgers Univ.	X				Joint Physics & Astronomy program.
Univ. of Texas (UT) at Austin			X		Eliminated the PGRE from the graduate application process based on evidence that: (1) It shows no strong correlation with long-term research success; (2) It imposes a large financial burden and has a disproportionately large negative impact on under-represented groups and some international applicants.
Texas Christian Univ.		X			
Univ. of Toledo		X			PGRE is optional, but is strongly recommended. We are a joint Physics & Astronomy department
Univ. of Washington		X			Dropped the PGRE requirement based on evidence that it does not correlate strongly with long-term success, and following the AAS recommendation. Allows applicants to submit evidence to demonstrate subject mastery that is not a required part of the application, if they wish to do so.
Univ. of Utah	X				Under Discussion.
Vanderbilt Univ.			X		
Univ. of Wyoming		X			
Yale Univ.				X	We require GREs, but allow Physics or Mathematics GRE scores. We rarely look at applicants who score lower than the 20th percentile, unless one of our committee members can persuade us otherwise.