The Graduate Record Exam

GRE General Test

~4 hour test in three parts
Cost: $205

GRE Subject Test (Physics)
~3 hour, 100 question, multiple-choice
Cost: $150

41. The quantum efficiency of a photon detector is 0.1. If 100 photons are sent into the detector, one after the other, the detector will detect photons

(A) exactly 10 times
(B) an average of 10 times, with an rms deviation of about 0.1
(C) an average of 10 times, with an rms deviation of about 1
(D) an average of 10 times, with an rms deviation of about 2
(E) an average of 10 times, with an rms deviation of about 3

43. Which of the following wave functions represents a solution to the Schrödinger equation for an electron in the $2s$ state of a hydrogen atom? (c is a constant and a_0 is the Bohr radius.)

(A) $c \cos \theta$

(B) $c \exp\left(-\dfrac{r}{a_0}\right)$

(C) $c\left(1 - \dfrac{r}{2a_0}\right) \exp\left(-\dfrac{r}{2a_0}\right)$

(D) $c\left(1 - \dfrac{r}{2a_0}\right) \exp\left(-\dfrac{r}{2a_0}\right) \cos \theta$

(E) $c\left(1 - \dfrac{r}{2a_0}\right) \exp\left(-\dfrac{r}{2a_0}\right) \sin \theta \exp(\pm i \phi)$

53. A microwave line has a laboratory wavelength of 1 μm. If the Hubble constant $H \approx 75$ (km/s)/Mpc, the observed wavelength for the line from a galaxy 100 Mpc distant is about

(A) 250 nm shorter
(B) 25 nm shorter
(C) the same
(D) 25 nm longer
(E) 250 nm longer

Perspective (12% income tax):
$7.25/hr -> $6.38/hr (56 hrs)
$2.13/hr -> $1.87/hr (190 hrs)

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NOTE: many students will not have taken upper-level physics courses before taking the PGRE

Numerical markers used for admission
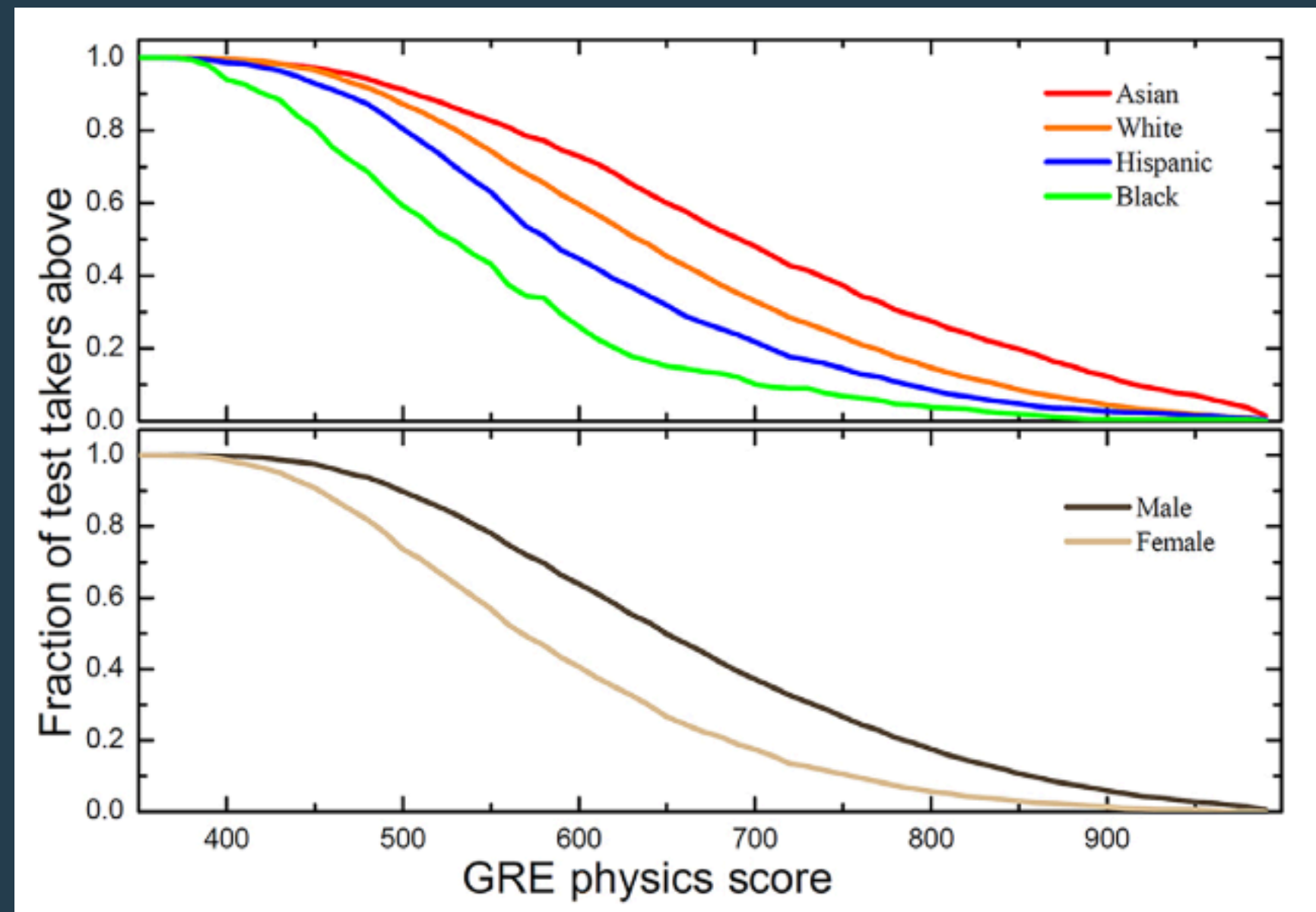
This distribution of GRE scores suggests weighting scores in admissions limits the diversity of potential PhD students [1].

[1] Miller et al., Sci. Adv. 2019;5:eaat7550
[2] G. L. Cochran, et al, 2018 PERC Proceedings
[3] R. Wilson, PhD Dissertation (2020)