

## The null hypothesis for unidentified flying objects

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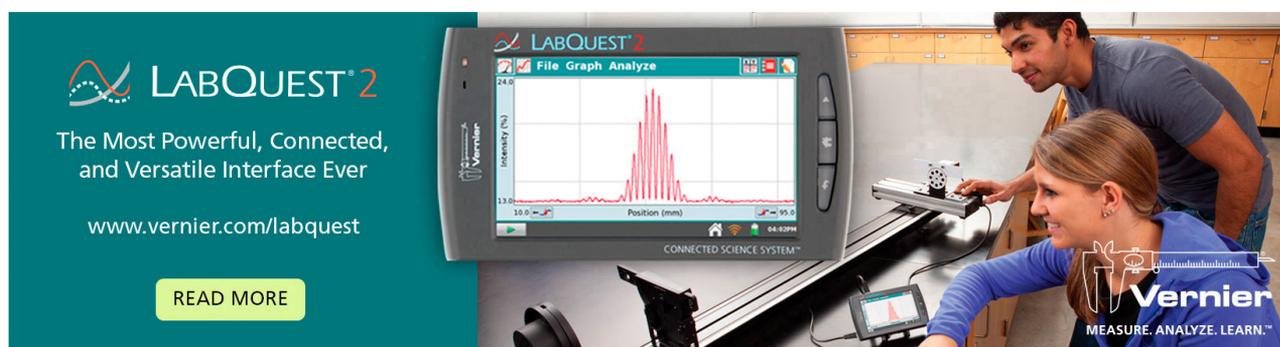
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book will find that their students will be strongly benefited by a prior, good high school physics course. Careful attention also will be needed for filling in gaps in the presentation. Judicious restriction of the topics selected for class use will be necessary if time is to be gained for treating some of the interesting biomedical applications the text contains.

Most of the problems demand little analytical thinking. The problem-solving orientation of the science/engineering course is consciously avoided. As the author says, most of the exercises are of a "one-step nature." Few, however, are qualitative. Of over 600 problems provided, about 25% are related to health science applications.

Teachers who emphasize scientific and analytical thinking in their classes will not be satisfied with this text. It will be more useful to those who concentrate on learning facts, especially where a strong health science orientation is appropriate.

**James B. Gerhart**, *University of Washington, Seattle, Washington 98195*

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## PHYSICS — WITH LOTS OF ENGINEERING

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**Physics for Technical Education.** Dale Ewen and LeRoy Heaton. Prentice-Hall, Englewood Cliffs, 1981. 608 pp. \$19.95.

An introductory physics text should provide the basic principles of physics in mechanics, fluids, thermal physics, wave motion, electricity and magnetism, optics and some aspects of modern physics. This text presents all this material in a manner understandable to students with a mathematics background of algebra and trigonometry. Some features will be of great help to students and teachers. Physicists, however, may have some reservations regarding the engineering emphasis of the material.

The first impression is that it is an engineering text. It is not only that many of the problems and examples have an engineering emphasis but also the manner in which the material is presented. For the most part, a brief discussion of a new idea is quickly translated into a formula. This is followed by several numerical examples and then the entire process is repeated. The emphasis appears to be on the application of principles rather than on the principles themselves. It is possible that students will be able to manipulate the formulas quite well without having a full and lasting

understanding of the fundamental concepts a physics course should provide.

For those comfortable with this approach the authors do an excellent job. There are good worked-out examples, all using a problem-solving method suggested for the students to follow. The repeated emphasis on how to approach the solution of problems is an excellent facet of this text. Another feature which could be included in all physics texts is the introduction and treatment of significant figures in all the discussions, examples and problems. Often authors will introduce the concept of significant figures in the first chapter and proceed to ignore it in the remainder of the book. It is not surprising that many students do not know how to treat significant figures and fail to appreciate the importance of being able to do so. The consistency of the authors is also present in their use of units. Only metric units are used and nearly all are SI.

The layout of the book is tedious with material running together. The visual impact is that any one part of the text is like any other. The material, itself, however, is well written.

For those who want a physics text with very strong engineering technology overtones, this is an excellent choice.

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## THE NULL HYPOTHESIS FOR UNIDENTIFIED FLYING OBJECTS

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**The UFO Verdict: Examining the Evidence.** Robert Sheaffer. Prometheus Books, Buffalo, 1981. 242 pp. \$15.95.

If anything can be said with certainty about UFO's it is that all sighting reports to date construct an anecdotal fog of ambiguity. On one side of the muddle can be found the believers and on the other the debunkers, ever trying to win a final victory over the pervading forces of ignorance. Robert Sheaffer is well known within UFO circles as a vigorous exponent of the view that nothing of significance lurks behind the often sensational claims of UFO witnesses. Rarely has this null hypothesis been so skillfully presented.<sup>1</sup> Sheaffer demonstrates how a consistent and believable pattern can be woven from the fabric of total skepticism. No matter how many cracks can be found in his argument by defensive UFO investi-

gators, they cannot dispel a possibility that Sheaffer is correct; a possibility which categorizes UFO's between fairies and the Easter bunny.

On the other hand Sheaffer could also be wrong. Ridicule only goes so far before sounding somewhat strained. For example, entire books have been written on the contents of the Air Force project Blue Book files<sup>2</sup> yet Sheaffer is satisfied to toss everything in the files into the trash with a flippant one liner. He is also over zealous in dismissing the predictive powers of any but the null hypothesis. John Ball, who, along with most scientists, probably feels no curiosity about UFO sightings, has described a so-called "zoo hypothesis"<sup>3</sup> wherein he is moved by his analysis to ask why contact with extraterrestrials has not yet occurred. Buried within the UFO data might be some suggestive hints that it has.

But then anecdotal tales prove nothing despite what you read in the media. *The UFO Verdict* should be in every library and available to all students as a balance to the deluge of popular pabulum passing as an alternative to solid science.

**Theodore Spickler**, *West Liberty State College, West Liberty, West Virginia 16074*

### References

1. The only other effective book debunking UFO's was written by Philip Klass (*UFO's Identified*. Random House, 1974).
2. J. Allen Hynek, *The Hynek UFO Report*. Dell, 1977.  
Brad Steiger, *Project BlueBook*. Ballantine, 1976.
3. John Ball, *Amer. Sci.* 68, 656 (1980).

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## DESCRIPTIVE ASTRONOMY

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**Horizons: Exploring the Universe.** Michael A. Seeds. Wadsworth, Belmont, CA, 1981. 414 pp.

*Horizons* is an introductory non-mathematical text. Some mathematical material is presented in small boxes throughout the book but these are not usually necessary to the development of the material. A supplementary study guide/workbook is available which includes monthly star maps, observational activities, the positions of the planets, as well as review material and sample questions. The text could be used for a two semester course or a one semester course if some material is omitted.