

*FUTURE FACES OF PHYSICS*

# Jeopardy



**Host Manual**  
**Game 2**



The host is responsible for introducing the game, reading the categories at the start of each round, reading the clues, and judging the responses. The responses do not appear on the Jeopardy board, they are given only in this manual. If no correct response is given to a clue, the host is responsible for reading the correct response.

### **Introducing the Game**

The Host should start the game by welcoming the players and audience and letting them know that this is *Future Faces of Physics Jeopardy*, and that *Future Faces of Physics* is the theme for SPS this year. Then he or she should briefly explain how the game works, being sure to highlight these rules:

1. Teams may not buzz in until the question has been read.
2. Teams can discuss responses prior to buzzing in, but all conversation must stop when someone buzzes in. The person that hits the buzzer must be the same person that gives the response.
3. Responses must be given in the form of a question.
4. The Host (or another person determined by the Host) is the final judge on whether an answer will be accepted.

### **Introducing the Categories**

At the start of each new round, the Host reads the categories aloud and gives brief explanations when necessary (explanations are given in parenthesis next to the category heading in this manual, where appropriate).

### **Reading the questions**

After a team selects a clue and the Game Operator opens the corresponding slide, the Host reads the clue. The Host should take his or her time reading—teams will not be able to buzz in until the Host has finished reading the clue and the Game Operator clears the buzzer system.

### **Judging the answers**

Correct responses to the clues are given in this manual. Occasionally teams may give responses that are similar but not identical to the responses given in the manual, or they may interpret a clue differently than was intended. The Host has final say on whether a response is acceptable. If you feel more comfortable, you can delegate this role to another person not participating in the game.

**Warning: Do not turn the page if you plan to play the game!**



## **GAME 2: Jeopardy Round**

### **Fabulous fields**

**100.** Of all the science disciplines, this “life” science has the most women in faculty positions (>20%).

*-What is Biology?*

**200.** Over 40% of students that major in physics and another field have their second major in this quantitative field.

*-What is mathematics?*

**300.** Females make up about 5% of the full professors in physics departments. In this ancient and closely-related field, that number is doubled.

*-What is Astronomy?*

**400.** Of astrophysics, condensed matter physics, and plasma physics, the most physics PhDs are awarded for work in this subfield.

*-What is condensed matter?*

**500.** In 1988, the University of Wisconsin and Wayne State offered the first accredited programs in this high-paying field of applied physics.

*-What is medical physics?*

### **Rock and Roll Physics**

**100.** Of diamond, graphite, quartz, and charcoal, this is the one not made from carbon.

*-What is quartz?*

**200.** Of a basketball, bowling ball, and car tire, this one rolls down a ramp fastest.

*-What is a bowling ball?*

**300. Daily Double:** The T in MOSFET, this item is critical to the audio amplifiers that most rockers like to crank up to "11".

*-What is a (Metal-Oxide-Semiconductor-Field-Effect)-Transistor?*

**400.** For wheels, this force is usually much smaller than either its sliding or static counterparts.

*-What is rolling friction?*

**500.** These three letters, in different permutations, are used to describe three quantities: resistance, conductance, and the hardness of rocks.

*-What are H, M, and O? (resistance – ohm, conductance – mho, & hardness – moh)*

## Origins

**100.** Physicist Arturo Menchaca-Rocha leads a team using cosmic ray muons to search for cavities in the *Pyramid of the Sun*, located in this country.

-*What is Mexico?*

**200.** Lunar features are formally named in this language – for example Mare Tranquillitatis (Sea of Tranquility).

-*What is Latin?*

**300.** Shuji Nakamura, a self-described country boy, developed the first blue light LED at a chemical company in this country.

-*What is Japan?*

**400.** Of the United States, Turkey, Japan, and Sweden this country awards the highest percent of physics bachelor's degrees to women.

-*What is Turkey?*

*Turkey – 39%, Sweden – 29%, US – 21%, Japan – 13%,*

**500.** This word comes from the title of a “9<sup>th</sup> grade” math book written in 820 AD by Muhammad bin Musa al-Khwarizimi of Persia.

-*What is algebra?*

## Pop Culture

**100.** In this 1997 film, based on a book by astronomer Carl Sagan, Jodi Foster's character meets extraterrestrial beings.

-*What is Contact?*

**200.** This new CBS sitcom revolves around two theoretical physicists and their pretty neighbor.

-*What is The Big Bang Theory?*

**300.** Physicist Lawrence Krauss wrote this popular “physics of” book for Voyager fans.

-*What is The Physics of Star Trek?*

**400.** The guitarist from this legendary English band recently defended his PhD work in astrophysics.

-*What is Queen?*

**500.** John Lithgow played a physics professor in this wacky NBC sitcom (1996-21).

-*What is 3rd Rock from the Sun?*

**Past Faces of Physics** (first names are not required)

**100.** In 1926, he formulated the uncertainty principle, which states the more accurately the speed of a particle is measured, the less accurately its location can be determined, and vice versa.

*-Who is Werner Heisenberg?*

**200.** In 1687, he published *Philosophiae Naturalis Principia Mathematica*, the seminal work explaining motions of bodies.

*-Who is Sir Isaac Newton?*

**300.** In 1886, this pair used an interferometer to disabuse the world of the notion that the universe is permeated by ether.

*-Who are Albert Michelson and Edward Morely?*

**400.** In the 1950s, she took X-ray diffraction photographs that were crucial evidence for the helical structure of DNA.

*-Who is Rosalind Franklin?*

**500.** In the late 1800s, she worked on the Harvard Classification Scheme, the first catalog to classify stars by temperature.

Oh Be A Fine Guy, Kiss Me Right Now! \*SMACK\*

*-Who is Annie Jump Cannon?*

## Double Jeopardy Round

### Spandex physics

**200.** The physicist whose name is associated with the linear spring-like restoring force that stretched Spandex exerts.

*-Who is Robert Hooke?*

**400.** The Spandex, an orbital demonstration device, was originally developed as a way to better study these twice daily-events caused by our moon.

*-What are the tides?*

**600.** This "toy" can be dangerous, especially when made from a piece of spandex tacked to a circular frame, because then it shoots twice as far as expected.

*-What is a slingshot?*

**800.** The journal, known as *AJP*, that published notorious Spandex articles including, *The shape of 'the Spandex' and orbits upon its surface* by SPS Director Gary White.

*-What is the American Journal of Physics?*

**1000.** Because of a curious cube root dependence on mass, an 8 lb ball resting on a traditional circular Spandex will sink about this many times lower than a 1 lb ball.

*-What is twice as much?*

### In the Classroom

**200.** Of 10, 30, and 50, about this percentage of students take physics in high school.

*-What is 30%?*

**400. Daily Double:** Of 20, 35, and 50, girls make up about this percentage of total enrollment in high school physics.

*-What is 50%?*

**600.** Of 40, 60, and 80, about this percent of high school physics teachers teach exclusively physics.

*-What is 40%?*

**800.** Of 30, 300, and 3000, the one that best describes the number of students earning bachelor's degrees in physics per year, per SPS zone.

*-What is 300?*

**1000.** Of 50, 100, and 300, about this many African-American females have earned PhDs in physics in the United States.

*-What is 50?*

**What's in a Name?** (Name the person whose name is associated with the equation for formula, first names not required)

**200.**  $F = ma$

-Who is Newton?

**400.**  $v = H_0 D$

-Who is Hubble?

**600.**  $\oint_c B dl = \mu_o I_c$

-Who is Ampere?

**800.**  $\sum_{n=0}^{\infty} \frac{f^{(n)}(a)}{n!} (x-a)^n$

-Who is Taylor?

**1000.**  $i\hbar \frac{\partial}{\partial t} \Psi = -\frac{\hbar^2}{2m} \nabla^2 \Psi + V\Psi$

-Who is Schrodinger?

**Stands for it** (give the acronym)

**200.** Kent Cullers, a blind physicist, leads a signal detection team for this organization, which conducts research on "life in the universe."

-What is SETI? (*Search for Extra-Terrestrial Intelligence*)

**400.** Fermilab's Tevatron is the most powerful particle accelerator on earth, but it will soon be surpassed by the Large Hadron Collider, under construction at this European center.

-What is CERN? (*European Organization for Nuclear Research*)

**600.** In 1973, Chien-Shiung Wu became the first female president of this professional society, which publishes Physical Review Letters.

-What is APS? (*The American Physical Society*)

**800. Daily Double:** African Americans are most likely to earn a physics bachelor's degree at this type of institution (4-letters).

-What are HBCUs? (*Historically Black Colleges and Universities*)

**1000.** The mission of this group is to promote the professional well-being of African American physicists within the scientific community and society.

-What is NSBP? (*National Society of Black Physicists*)

## **Extreme Planets**

**200.** Of the 8 official planets, the one with the slowest orbital speed about the sun.

*What is Neptune?*

**400.** The planet that has the largest angular velocity about the sun.

*-What is Mercury?*

**600.** The planet that rotates slowest on its axis, because of tidal locking.

*-What is Mercury?*

**800.** It is the densest planet, because its lighter elements are more readily "boiled" off.

*-What is Mercury?*

**1000.** It rotates "sideways" and has the most unfortunate name, no matter how you pronounce it.

*-What is Uranus?*

## **Final Jeopardy Round**

### **Newton's Gravity**

This is the number of "g's" you'd experience if you're on a planet with half the earth's radius and half its mass.

*-What is 2?*