

Director's Matters

By H. Frederick Dylla, Executive Director

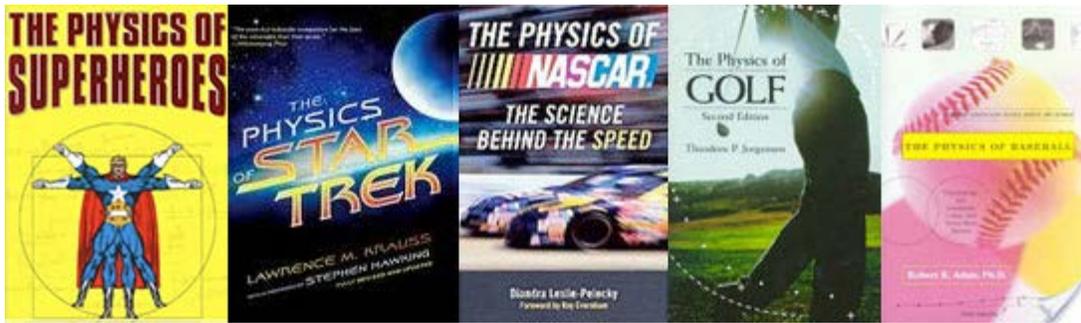
The physics of summer break

If you ask a typical middle or high school student about a science or physics class, rarely do adjectives such as "fun" or "cool" come up. Several creative physics teachers, however, have found unique ways to use popular culture to excite the imagination of students and have written numerous books and articles that connect that enthusiasm to science. During the summer, teachable moments are plentiful—in movies, theater, and sports and other outdoor activities.

Just as the warm weather was descending upon us, Captain Barbossa and Jack Sparrow graced the big screen in the fourth *Pirates of the Caribbean* movie, *On Stranger Tides*, to win wide acclaim from young and old swashbucklers. Around the same time, Carl Mungan and John Emery, physics professors from the US Naval Academy, published an article in the May 2011 issue of *The Physics Teacher* that could enliven a young midshipman's first-year physics class much more than studying inclined planes for launching ships. In "[Rolling the Black Pearl Over: Analyzing the Physics of a Movie Clip](#)," Mungan and Emery tackle a scene from the third *Pirates* chronicle from a physics perspective. Jack Sparrow somehow needs to roll his galleon through a full 360-degree rotation during a green flash at sunset in order to return the ship to the living world. (The science behind the appearance and rarity of green flashes is a teaching moment for another day.) Returning to the galleon's unlikely maneuver ... Mungan and Emery show that the antics of Sparrow to rock and roll the decks are in fact realistic.

From the comics to movies to the accident-prone new play undergoing previews on Broadway, we have the superhero Spiderman with his dramatic leaps and bounds. In Jim Kakalios's lectures and book [The Physics of Superheroes](#), we find that poor Spiderman and his damsel in distress would never survive such rapid decelerations without fracturing their skeletons, being only mere mortals.

Star Trek fans abound some 40 years after the series debuted on the small screen. As much as we would love to avoid summer traffic jams by being able to teleport, sadly teleportation has been achieved only with photons, and if we were to experience the acceleration of warp drive, we and our vehicle would be pulverized. Somehow even TSA lines seem bearable in comparison. Check out Lawrence Krauss's [The Physics of Star Trek](#) for real physics lessons behind the Starship *Enterprise*.



Back on planet Earth you may be heading to the racetrack, the golf course, or the ballpark this summer. Take a curious companion and a copy of Diandra Leslie-Pelecky's book [*The Physics of NASCAR*](#), or Ted Jorgensen's [*The Physics of Golf*](#), or Robert Adair's [*The Physics of Baseball*](#), and you will see how these creative teachers have enabled students to learn some real physics while they are enjoying their favorite sports from perhaps a very different perspective.

PUBLISHING MATTERS

Impact factors rise for key AIP journals

The impact factors of many of AIP's key journal titles have climbed, according to the Thomson Reuters' 2010 Journal Citation Reports. Stand-out performances include a 34.6% jump by *Biomicrofluidics*, a more than 15% increase by *Chaos*, and impressive gains for *Applied Physics Letters*, *Physics of Fluids*, *Review of Scientific Instruments*, *Journal of Physical and Chemical Reference Data*, and *Journal of Laser Applications*.



The performance means that AIP journals continue to maintain their place among the most highly cited journals in their categories. Led by *Applied Physics Letters* and *Journal of Applied Physics*, AIP ranked first overall in applied physics citations. Its total of four titles garnered more than a third of all cited references among the 116 journals in the category, while representing just 4% of the titles indexed. To see how the other journals fared, see the [full release](#).

PHYSICS RESOURCES CENTER MATTERS

Convening for a glance at our history

The Center for History of Physics is pleased to host a four-day conference, from July 28 – 31, for graduate students and early-career scholars on the theme: "[Continuity and discontinuity in the physical sciences since the enlightenment](#)" at the American Center for Physics. Interested AIP Member Society members and staff are also invited to attend.

[Registration](#) is due this Friday, July 15. The conference will also feature a public lecture by David DeVorkin, senior curator of history of astronomy and the space sciences at the National Air and Space Museum, on Friday evening, July 29.

**Continuity and Discontinuity
in the Physical Sciences
Since the Enlightenment**

A conference for
graduate students and
early-career scholars



July 28–31 ▶

State Outcomes in math and science education reveal big disparities



In a new ranking of how well the states' K-12 schools are preparing their students for science and engineering careers, Massachusetts leads the pack, while Mississippi trails behind as "worst in the United States." The rankings, the Science and Engineering Readiness Index (SERI), were developed by Susan White,

Research Manager in the Statistical Research Center, and physicist Paul Cottle of Florida State University.

Unlike other state rankings of science education that concentrate on making all students scientifically literate, the SERI uniquely focuses on the high school subjects that research says are most important to future scientists and engineers – physics and calculus. The rankings show that there are a small number of high performers with 10 states posting scores above the national average. Twenty-one states in total, including California, earned below or far below average scores.

For a copy of the full SERI report, please contact [Susan White](#). The report was highlighted in the July issue of *Physics Today* in the "issues and events" brief, "[Convincing US states to require physics](#)." It will also be featured in the Summer issue of the American Physical Society Forum on Education newsletter. For more information, see the AIP [press release](#).

Recommend books for the Library

The Niels Bohr Library and Archives staff is glad to receive suggestions for new book acquisitions. Recommendation forms are available at the reference desk and on the bulletin board outside the Library. You can also send an email to nbl@aip.org using "Suggest a purchase" in the subject line.

| Suggest a Purchase | |
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WHAT'S HAPPENING THIS WEEK

Wednesday, July 13

- ACP Daycare graduation ceremony, 11 am (College Park, MD)
- Management Committee retreat, 1–5 pm (College Park, MD)

We invite your feedback to this newsletter via email to aipmatters@aip.org.

For past issues of this newsletter, visit the [AIP Matters archives](#).