

WebSights features announcements and reviews of select sites of interest to physics teachers. All sites are copyrighted by their authors. This column is available as a web page at [PhysicsEd.BuffaloState.Edu/pubs/WebSights/](http://PhysicsEd.BuffaloState.Edu/pubs/WebSights/). If you have successfully used a physics website that you feel is outstanding and appropriate for WebSights, please email me the URL and describe how you use it to teach or learn physics—[macisadl@buffalostate.edu](mailto:macisadl@buffalostate.edu).

### • **High-quality animations in atomic physics**

[beta.quantumreflections.net/](http://beta.quantumreflections.net/)

Quantum Reflections is a project from Münster University, Germany, in cooperation with a team of outstanding design artists. After two years of intense work, many new visualizations for atomic physics have been developed, starting with visualizations of standing waves in one, two, and three dimensions, then introducing quantum physics in simple geometric pictures of nodal points, nodal lines, and nodal planes of the electrons' wave function. All visualizations are mathematically sound and culminate in brand new visualization of the periodic table of elements as a "quantum organ." Since complex mathematics is substituted by high-quality animations, even high school students can access complicated and important topics such as the geometric meaning of the Pauli principle or the selection rules, just to mention two examples.

Readers of *The Physics Teacher* are invited to get access to the beta version of the project and share it with their students before publication to give feedback for further improvement to the team of authors before release of the web-based online course at the end of 2017.

*Submitted to WebSights by Stefan Heusler of Westfälische Wilhelms-Universität Münster*

### • **100 HTML5 animations and simulations for introductory physics**

[physics.bu.edu/~duffy/classroom.html](http://physics.bu.edu/~duffy/classroom.html)

Andrew Duffy has authored a collection of approximately 100 HTML5 simulations aimed at introductory physics, which is relevant for both high school and college/university. The collection continues to grow. These are free and should also run without any issues on any browser or mobile device. The simulations range from standard projectile motion simulations to puzzles students can use to check their conceptual physics understanding.

*Submitted to WebSights by Andrew Duffy of Boston University*

### • **August 21 Great American Total Solar Eclipse fever running high**

[aapt.org/resources/eclipse2017](http://aapt.org/resources/eclipse2017)

[www.space.com/33797-total-solar-eclipse-2017-guide.html](http://www.space.com/33797-total-solar-eclipse-2017-guide.html)  
[eclipse2017.org](http://eclipse2017.org)

Eclipse fever is building in the United States with many hotel/motel bookings (though by now you may need a tent) and plans being made for travel to the 10+ U.S. states (five state

capitals and many cities) from Oregon through South Carolina swept by totality, though a partial solar eclipse will be visible over all of North America. Since you cannot safely look directly at the Sun (during an eclipse or at any other time), several sites ([eclipse2017.org](http://eclipse2017.org)) sell eclipse glasses or describe how to project a safely viewable image with an inexpensive paper covered mirror or mirror in an envelope – there is no need for esoteric devices to see the eclipse or to hide indoors for vision safety. As a *TPT* reader, expect someone to ask you for expert guidance this summer, so do prepare by reading ahead.

The AAPT, working with Temple University as part of the NASA Heliophysics Education Consortium, has prepared a collection of research-based teaching resources for teaching about solar and lunar eclipses, including conceptual surveys, labs, tutorials, concept tests, and homework.

### • **Hewitt-Drew-it! PHYSICS for Teachers 1. Teaching Equations of Physics without Numbers**

<https://www.youtube.com/watch?v=Ghloa5GJ6Vk>

### • **Hewitt-Drew-it! PHYSICS for Teachers 2. Timeless Teaching Tips for Physics Teachers**

<https://www.youtube.com/watch?v=fAlT8c8neX0>

These videos by Paul Hewitt provide food for thought, as well as inspiration, for beginning and seasoned physics teachers alike. The videos succinctly convey the revered teacher and author's views on making physics accessible, meaningful, and enjoyable.

The first video's central message is that in an introductory physics course, equations should be used as guides to understanding the natural world, not simply as recipes for solving mathematical problems. Hewitt stresses that equations show connections in nature and guide critical thinking. Turning an introductory physics course into an exercise in number crunching is anathema to Hewitt. He contends that if a learner's first course in physics is a delightful experience in discovering the rules of nature as expressed in equations, you can then bring on the computational aspects of physics, for the mathematical rigor of a second course will be welcomed.

In the second video, Hewitt discusses strategies he has found effective in giving students a sense of achievement and delight as well as an understanding of the basic principles of physics. Both videos make clear Hewitt's passion for physics teaching and that his goal is to make every student's first exposure to physics a positive and meaningful experience.

*Submitted by Chris Chiaverina of [discoveriescience.com](http://discoveriescience.com)*