

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/. 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.

Graphing stories

<http://graphingstories.com/>

A Dan Meyer and BuzzMath collaboration, this is a collection of several dozen interesting and accessible videos of physical phenomena. The videos first portray a situation, then show a blank graph with suggested dimensions and units, and if desired the video can then be paused to have students make observations and comments. Next a 15-second clip of the live phenomenon with a running time display is shown, and again the video can be paused for student graphing and discourse. Finally the video shows the phenomenon with a semi-transparent overlay simultaneously constructing the graph. Phenomena and situations include watching and graphing: an analog clock, height of a zipline rider, playground equipment riding, air pressure, water volume, ponies in the frame, heights and weights of stacks of cups, etc.

Submitted by Prof. Dave Henry of Buffalo State Physics

Vernier and PASCO offering awards to educators

www.nsta.org/about/awards.aspx#vernier

www.nsta.org/about/awards.aspx#stem

Several Vernier Technology Awards recognize innovative use of data collection technology in the science classroom for K-12 and college. Awards consist of \$1500 towards the NSTA National Conference, \$1000 cash, and \$3000 in Vernier products. Application deadline is Nov 30th.

Three PASCO STEM Educator Awards recognize excellence and innovation in MS and HS STEM education. Awards consist of \$1000 to attend NSTA National, \$500 cash, and a \$5000 certificate for PASCO products. Applications are due Dec 15th.

Reposted from Modeling digest and AMTALIST

Violin string in slow motion by Physics Footnotes

<http://physicsfootnotes.com/physl-vibrating-string>

<http://knutsacoustics.com/files/The-Helmholtz-motion.pdf>

http://www.phys-l.org/archives/2016/8_2016/msg00136.html

<http://physicsfootnotes.com>

The presentation and discussion of a beautiful high-speed short video showing a detuned violin G string being stroked with a bow, showing the bow-driven Helmholtz corner (sharp cornered wave driven from end to end—see especially the animated GIF). After the bow is raised, the higher harmonics damp out into the lower modes (mainly the fundamental), and the string moves into multi-planar up and down modes, free from the bow restricted side-to-side motion.

Derek McKenzie's Physics Footnotes blog has several dozen entries on this and other physics phenomena and insights.

Posted to PHYS-L by Derek McKenzie and commented on by Paul Nord, Bernard Cleyet, and others

The new Ampere is coming!

<http://www.nist.gov/pml/div684/grp02/counting-down-to-the-new-ampere.cfm>

<http://www.bipm.org/en/measurement-units/new-si/>

According to the U.S. National Institute of Standards and Technology, “in 2018, the base units of the International System of Units (SI) are scheduled to be re-defined in terms of physical constants, with major changes in the kilogram, ampere, kelvin, and mole.” NIST is working on a new quantum-based practical measurement system to replace the present 70 year old definition phrased as an unrealizable, hypothetical experiment. Note we currently have laboratory experiments capable of measuring pico- and nano-amperes.

The new definition will fix the defined value for “the charge of a single electron to the value of $1.60217X \times 10^{-19}$ ampere-second, where ‘X’ will be specified at the time of the redefinition. One ampere-second is the same as one Coulomb.”

As John Denker points out, fixing the charge of an electron will be analogous to “defining the inch as 2.54 cm exactly, or defining the speed of light to be 299,792,458 m/s exactly.” We are hoping for an integer number of electrons in the Coulomb.

Posted and discussed on PHYS-L by Bob Sciamanda, Chuck Britton, David Marx, and John Denker

National Academies Press releases of possible interest (freely available online)

<http://www.nap.edu>

– Art, Design and Science, Engineering and Medicine Frontier Collaborations: Ideation, Translation, Realization

<http://www.nap.edu/catalog/23528/>

– New Worlds, New Horizons: A Midterm Assessment (Astronomy and Astrophysics Research)

<http://www.nap.edu/catalog/23560/>

– Science Literacy: Concepts, Contexts, and Consequences

<http://www.nap.edu/catalog/23595/>

– Quality in the Undergraduate Experience: What Is It? How Is It Measured? Who Decides?

<http://www.nap.edu/catalog/23514/>

– Barriers and Opportunities for 2-Year and 4-Year STEM Degrees: Systemic Change to Support Students' Diverse Pathways

<http://www.nap.edu/catalog/21739/>

A veritable plethora of good reading.