***Dan MacIsaac,* Column Editor,** Physics Department,
SUNY-Buffalo State College, Buffalo, NY 14222; macisadl@buffalostate.edu

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.*

• *"Introductory Physics, A Model Approach" by Robert Karplus (1969, revised and edited by Fernand Brunschwig, 2006) with a Teacher's Guide.*

STEMteachersNYC.org/introductory-physics

Robert Karplus, former president of AAPT and professor of physics at Berkeley, wrote this innovative textbook in the '60s. The 2nd edition has now been published online, FOR FREE, under a Creative Commons license.

Karplus developed an innovative sequence of topics and activities that gradually developed both the concepts and the abstract reasoning skills required to understand and apply physics. The book begins with familiar examples, plain language explanations and practical hands-on challenges to build up understanding of how science works, models and modeling, reference frames, interaction, and energy. Chapters 5-7 use models of light as a theme, developing basic optics, waves, sound, music, and interference and diffraction. Chapter 8 develops modern physics, the Bohr Atom, introductory quantum mechanics, and nuclear physics on the basis of the wave model. The second half of the book includes major sections on energy (temperature and heat, force and displacement, electric current) and (finally) the currently canonical starting point of motion—kinematics, Newton's laws, periodic motion, and basic thermodynamics and kinetic theory. A password for a Teachers' Guide for Chapters 5-8 is available by email.

Submitted by Fernand Brunschwig of STEMteachersNYC

• *David Butler's "How Far Away Is It?"*

youtube.com/watch?v=HgNJwg2GISs
howfarawayisit.com/
newsletter.oapt.ca/files/REVIEW-how-far-away-is-it.html

David Butler is a retired parallel systems software developer who originally trained in the mathematics of Quantum Mechanics. Since 2013, he has been producing an extensive series of introductory-level (H.S. and lower division undergraduate) didactic astronomy and physics videos (he calls his playlists "video books") strongly focused on making measurements, and how we know things. His four current video books address the questions of "How far away is it" (astronomy and astrophysics strongly focused on visible light distance measurement concepts); "How small is it?" (light and electron microscopy, atoms, particles, and the Higgs boson), "How fast is it?" (motion, c, special and general relativity, and gravitational waves) and "How old is it?" (Cosmology and the Big Bang; stellar, and planetary evolution, and the evolution of life are in development.

These resources are also reviewed by Robert Prior, the OAPT (Ontario Association of Physics Teachers) newsletter editor. Butler communicates his joy and pleasure in lecturing on these very popular topics in a laid back, grandfatherly fashion starting in his backyard and makes excellent use of mostly existing images and animations thoughtfully and insightfully curated from the web. If you like watching documentaries, you will love his videos, which include introductory-level calculations and quite a bit of STEM history. The videos are also available as convenient snippets, though I struggled finding a good descriptive catalog of the lot. They are fun to watch and you are likely to find useful snippets for classroom use, but take time to work through. Regrettably, I did not find the lesson plans useful.

• *Eugene K's "Physics Videos" features "Black Holes as you've never seen them"*

tinyurl.com/WS-EKblackhole
youtube.com/user/EugeneKhutoryansky
xkcd.com/895

Eugene Khutoryansky's excellent physics visualization channel has added a new video visualizing black hole phenomena modeling light movement through spacetime falling into a black hole—including the event horizons, time distortion and the "frozen star" effect, red and blue shifts, different observers frames of reference, and tidal forces (spaghettification). Other recent thought-provoking videos by Eugene include "An intuitive explanation for the intermediate axis theorem," "How not to teach physics," and "Osmosis as you have never seen it."