# TPT *WebSights* column draft for November, 2017:

*WebSights* features announcements and reviews of select sites of interest to learners and teachers of introductory physics. 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.

**ElectroBOOM**

www.edn.com/electronics-blogs/benchtalk/4433531/Engineer-goes-BOOM

www.electroboom.com/?page\_id=302

www.youtube.com/user/msadaghd

facebook.com/ElectroBOOM

www.electroboom.com/?p=602

www.electroboom.com/?p=450

www.electroboom.com/?p=151

www.electroboom.com/?p=688

en.wikipedia.org/wiki/Automated\_external\_defibrillator

A forewarning: If you regularly teach introductory circuits/ electronics/ electrical safety then *you* (but perhaps not your students) really should know about ***ElectroBOOM***. Iranian-Canadian electrical engineer and YouTube personality Mehdi Sadaghdar has an adult slapstick comedy channel dedicated to simple and interesting electrical projects going inevitably, horribly wrong-- think Mr. Bean or Jerry Lewis with small electrical explosions, sparks, partial expletives and much bleeping. As certain as the demise of a redshirted crewman in a Star Trek episode, an electrolytic capacitor in a ElectroBOOM video will explode, oscilloscope probes will spectacularly short 120VAC to ground, output transistors will melt and Mr S. will be inevitably and comically shocked and / or burned multiple times. Having said this, many of his projects, safety discussions and un-safety demonstrations are quite intriguing -- I had never seen anyone measure resistance between their eyeballs with a DMM; and recharging a car battery with AA cells was also new to me. But don’t let Mehdi’s apparent bumbling mislead you; it is quite clear that he’s being insightfully sophisticated and calculating in his risk-taking when he produces sparks and shocks himself (e.g. power bar cutouts, lifting feet off the floor, hitting return first with the back of his fingers in his ***Electric Guitar*** project; also the ***Biba Stuja the Battery Man*** discussion) -- so don’t let your students try this. Also, his videos are NOT entirely focused on STEM content, he often includes songs, off-topic political and social rants, impressions and low-brow (or uni-brow) humor which will offend some. Recall stereotypical undergraduate engineer behaviors.

I first learned of ElectroBOOM through online engineering industry periodicals while looking to update my deliberately super boring freshman electrical safety presentation, and his extensive un-safety video demonstrations on shocks (current vs. voltage as ’the’ ‘killer’) and the pain associated with shocks (AC vs DC; frequency dependence; measuring body capacitance) remind me of the historical experimental observations Cavendish and Maxwell documented before meters were widespread or even existed -- estimating electric current strength by describing their body shock and discomfort (google maxwell electric shock). His ***Electrocution in Water*** and practical ***GFCI*** outlet videos are practically informative for instructors as well. ElectroBOOM isn’t usually technically, linguistically or conceptually pretty physics -- he’s definitely an electrical engineer, but nonetheless this is powerfully practical stuff. After several ElectroBOOM videos my gut hurt so much from laughter I sponsored him on Patreon – and I hope he uses a spotter with an AED when recording future videos. When watching ElectroBOOM, your mileage will definitely vary.

**Polaroid filters, EM waves and an introduction to Bell’s Theorem / Quantum Mechanics**

youtube.com/user/minutephysics

tinyurl.com/WS-MPqmpolaroids

youtube.com/3blue1brown

https://tinyurl.com/WS-3B1Bqm

A new collaborative pair of complementary videos were just released: one titled ***Bell's Theorem: The Quantum Venn Diagram Paradox*** by ***MinutePhysics***, and ***Some light quantum mechanics (with MinutePhysics)*** by ***3Blue1Brown***. Henry Reich’s *MinutePhysics* spends time examining and analyzing the properties of three polarizing filters mainly in terms of classical E&M waves, while Grant Sanderson’s*3B1B*‘s *3Blue1Brown* (his eye color) further discusses introductory QM from a mathematician’s standpoint, spending significant time on basis vectors.

**2017 Nobel Prize in Physics announced to Rainer Weiss, Barry C. Barish and Kip S Thorne for gravitational waves.**

[www.nobelprize.org/nobel\_prizes/physics/laureates/2017/press.html](http://www.nobelprize.org/nobel_prizes/physics/laureates/2017/press.html)

[ligo.org/](http://ligo.org/)

[www.theguardian.com/science/2017/oct/03/nobel-prize-physics-discovery-gravitational-waves-ligo](http://www.theguardian.com/science/2017/oct/03/nobel-prize-physics-discovery-gravitational-waves-ligo)

tinyurl.com/WSGravWavesSep2017

In perhaps the most-anticipated announcement of the year, the 2017 Nobel Prize in physics has been announced f*or decisive contributions to the LIGO detector and the observation of gravitational waves* to Weiss, Barish and Thorne. First observed in September 2015, gravitational wave event observations of black hole collisions have most recently been announced just last week by the NSF.

*Posted to phys-l listserv by John S Denker.*

**Cassini-Huygens Saturn mission ends spectacularly**

tinyurl.com/WS-CassiniNASA1

[nyti.ms/2y0JLYW](https://nyti.ms/2y0JLYW)

[iopscience.iop.org/book/978-1-6817-4497-1](http://iopscience.iop.org/book/978-1-6817-4497-1)

After 20 years, Cassini has explored the Saturn system of moons, delivered the European Heygens probe to Titan and diving through the gap between the rings and the planet 22 times. The NY Times best 100 images are breathtaking. This is the kind of science for which we look to NASA. IOP has released a free ebook: [***The Ringed Planet***](http://iopscience.iop.org/book/978-1-6817-4497-1)***: Cassini's Voyage Of Discovery At Saturn*** by Joshua Colwell, University of Central Florida.

**Collection of Essays on Physics for physics teachers freely available**

www.basic-physics.com/

Kenneth Ford, AAPT Oersted Medal recipient has produced a free companion website to his book *[Basic Physics: A Resource for Physics Teachers](https://www.amazon.com/Basic-Physics-Kenneth-W-Ford/dp/9813208015%22%20%5Ct%20%22_blank)*, aimed at introductory physics teachers and learners. These essays (with Hewitt cartoons) cover topics that may be of interest to teachers of introductory physics at both the high-school and college levels. The essays are housed in seven sections, the first five of which follow the chronology of the great discoveries of physics—and the corresponding formulations of broad theories—from the seventeenth through the twentieth centuries. The sixth follows physics into the subatomic domain, and the seventh encompasses thoughts of a more general character. Ken solicits teacher feedback and input.

*Submitted by Ken Ford.*