# TPT *WebSights* column draft for November 2024:

*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 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).

**Early Quantum Mechanics -- Dr. Jorge S. Diaz’ JK0  YouTube channel:**

<https://www.youtube.com/@jkzero/videos>

<https://en.wikipedia.org/wiki/2020_Beirut_explosion>

<https://tinyurl.com/WS-DiazSG>

<https://www.youtube.com/@Kathy_Loves_Physics>

<https://tinyurl.com/WS-DiazFineStr>

<https://tinyurl.com/WS-DiazCP>

<https://tinyurl.com/WS-DiazFH>

<https://tinyurl.com/WS-PSSCfh>

Dr. Diaz is an industrial physicist interested in explosions, shockwaves and historical modern physics. He first came to my attention while reading about the physics of the (roughly 0.5 kiloTon TNT equivalent) August 2020 Beirut chemical explosion. His 25-odd YouTube videos include presentations on the physics of explosions (blast waves, including faster than sound shock waves evolving to acoustic speed of sound waves), and on early atomic and quantum physics. I found Diaz’ most recent video on the Stern-Gerlach experiment to be compelling and envigorating storytelling together with an insightful scholarly exposition of the physics, at a level appropriate for undergraduate physics majors. Diaz’ social storytelling is at the level of High School physics pedagogue Kathy Joseph, but includes mathematics more appropriate for advanced freshmen and upper division physics majors. Diaz’ videos create a richly illustrated story, adding archival analyses of the literature and related images including portraits, technical diagrams, schematics and mathematics, of a kind only possible for a German speaking mathematical physicist. For instance, Sommerfeld’s many mathematical contributions to early quantum mechanics near and during the (first world) war years are re-examined from German sources.

Dr. Diaz’ videos include context, interpretations, historical, mathematical and technical presentations on much of early quantum mechanics, including the fine structure constant, the Franck-Hertz experiment, the correspondence principle and so forth. I would have found these videos very helpful before my undergraduate modern physics lab, especially the Franck Hertz experiment. Diaz’ F-H video also excerpts the excellent 1960 PSSC Physics film from Reed College, which I had never seen before (Franck himself speaks in that film), and includes references to commercial fluorescent tubes.

If you have students interested in learning about QM history including Bohr-period and adjacent mathematics (or just getting ready to do the F-H experiment) this is a compelling YouTube channel.

**Particle Physics with Don Lincoln and news in the field**

<https://en.wikipedia.org/wiki/Don_Lincoln>

Last month’s issue of The Physics Teacher included an excellent paper by Prof. Lincoln on Quark-Gluon Plasma (QGP aka “melted Protons”), and since I am teaching an evening course for High School teachers on Particle and Nuclear physics we had a field day with his papers and videos.

**More Five Levels of Complexity: e**

<https://www2.hamajima.co.jp/ikiikiwakuwaku/index.htm>

<https://www2.hamajima.co.jp/~tenjin/ypc/ypcalbum.html>

In February of this year, Chris Chiaverina recommended the Aichi Physics Circle Web site (URL, click on top green box). Physics Circles are groups of Japanese physics teachers who meet regularly to share resources somewhat akin to Local Physics Alliances in the US. Circles also collect large albums of activities, and in the past have published books.

Yasuo Ogawara of the Yokohama Physics Circle recently wrote me to recommend their site, which google translator had no problem rendering in English for me. The Yokohama site also has a rich collection of links to other Circles, sites and institutes, and links to the Gifu circle records as well. Mr. Yasuo assures me that the Yokohame Circles are extraordinary fun, and I hope to go attend someday. The meeting of July 21 featured several demonstrations and equipment new to me, including a friction hot water heater (boiling water with cotton rope in 3-5minutes, a burning paper rocket / magic demo, ending in beer and food.

*Submitted by Yasuo Ogawara* [*Ogawara@hs.keio.ac.jp*](mailto:Ogawara@hs.keio.ac.jp)

**Freebies and Downloads from Vernier Science Education and STEP-UP**

<https://tinyurl.com/WS-VernierSep24>

<https://tinyurl.com/WS-GuidelinesSTEPUP>

Team Vernier is again providing free physics teaching and learning equipment drawings and giveaways, classroom activity and software downloads, classroom posters t-shirt designs, digital wallpapers, blogs and webinars “and more.” Here at Buff State physics we have also been widely printing and posting the outstanding “Guidelines for Conduct During Discussions” poster produced by the APS STEP-UP people promoting women in physics as well. See this excellent color .PDF poster (in English and Spanish) fostering discourse and a positive classroom climate downloadable from “Share the Poster” under “Support for this Lesson” in “Women in Physics.”

*Email from* [*support@vernier.com*](mailto:support@vernier.com)

**Electric Vehicle Batteries and Harley-Davidson Noise and Vibration**

<https://www.youtube.com/@EngineeringExplained>

<https://tinyurl.com/WS-LFPbattery>

<https://tinyurl.com/WS-NMCbattery>

<https://www.youtube.com/@fortnine>

<https://tinyurl.com/WS-HDpotato>

My new guilty pleasure is watching videos about EV batteries, since Engineering Explained just released a series on “How to Ruin Your Electric Car’s Battery” both for Lithium Iron Phosphate (LFP) and Nickel Manganese Cobalt (NMC). The videos focus on chemistry, best practices and procedures for different kinds of batteries under different kinds of regular driving and storage conditions. Quite fascinating applied chemistry and physics.

My other junk watching is the irreverent (and often classroom-inappropriate) physics and engineering analysis of motorcycles from FortNine. His analysis of the physics and mechanics behind the highly characteristic “Harley-Davidson V-twin engine sound” and apparently excessive “paint-mixer like” stationary vibration is delicious. If you teach momentum, or are around motorcycles you should watch the video.