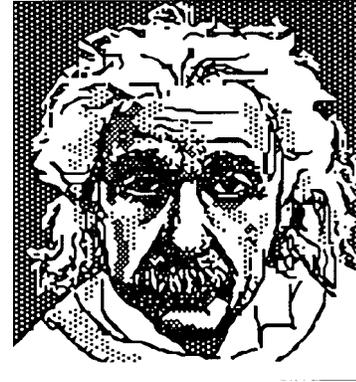


The Illinois Physics Teacher



**Fall 2017 Joint Meeting
Illinois and Wisconsin Sections of the
AAPT
October 20 – 21, 2017
Rockford University
Rockford, IL**

The Joint Fall meeting of ISAAPT and WAPT, themed “**Contemporary Physics Instruction**”, will be held at Rockford University in Rockford, IL.

Invited presentations are –

1. “**Las Campanas Remote Observatory: Remote Challenges and Solutions; Real Science Within Reach**” on Friday at 4:30 pm by Howard Hedlund of [Astro-physics, Inc](#) of Machesney park, IL.
2. “**The State of ‘Beyond the First Year’ Physics Labs and the Resources to Support Them**” on Friday at 5:15 pm by [Lowell McCann](#), Ph. D. of University of Wisconsin – River Falls, WI.
3. “**Building Instruments of Discovery**” on Friday at 7:45 pm by [Sarah Tuttle](#), Ph. D. of University of Washington, Seattle, WA.
4. “**Is the pipeline leaking? White women and other minoritized scientists in Astronomy**” on Saturday at 8:15 am by

[Sarah Tuttle](#), Ph. D. of University of Washington, Seattle, WA.

5. “**Science and Social Media: One Physicist’s Experience**” on Saturday at 1:15 pm by [Robert McNees](#), Ph. D. of Loyola University, Chicago, IL.

There will be four workshops –

W1. “Exploration of Integrating Computation into the Curriculum” by [Todd Zimmermann](#), Ph. D. of University of Wisconsin – Stout on Friday between 3:00 pm – 4:30 pm.

We will discuss the benefits of integrating computation into the high school and undergraduate physics curriculum and will explore a computational activity you can incorporate into your classroom. We will also look at the PICUP collection of activities that are available. We will discuss opportunities for you to develop and integrate computation into your classes. PLEASE BRING A LAPTOP COMPUTER.

Prior programming or computing experience is not necessary to attend this workshop.

W2. “Women and Minorities in the History of Physics, Role Models for Today” by Gregory Good, Ph. D., Director, [Center for the History of Physics](#) on Saturday between 9:00 am – 11:30 am.

Teachers will be introduced to the teaching materials on the AIP website related to the history of women and minorities in the

physical sciences. The purpose of these materials is to help students appreciate that not only white males have contributed to the development of physics, astronomy, and other physical sciences. On the flip side, there have been many more women than Marie Curie and many more African Americans than Benjamin Banneker and Jim Gates who have had successful careers in the physical sciences. We will explore several of the lesson plans in each group and explore games and other activities to bring these lessons to life.

W3. “More Modern *Modern Physics for the High School Classroom*” by [James Madsen](#), Ph. D. of University of Wisconsin – River Falls on Saturday between 11:00 am – 12:30 pm.

This workshop will show you how to bring current science from the IceCube Neutrino Observatory, the biggest and strangest telescope in the world, into your physics classes. We will start with a quick overview of the construction and operation of the IceCube Neutrino Observatory, a multi-purpose facility located at the South Pole. Then we learn about the standard model of particle physics. In this activity, you will star as one of nature’s fundamental particle, and learn that there’s more to matter than mass and charge. Finally, we use on-line tools to analyze IceCube data, and see how one goes from observations to understanding some of those energetic and puzzling phenomenon in the universe.

W4. “IOLab – a multi-sensor device” by [Morten Lundsgaard](#), Ph. D. of University of Illinois, Urbana-Champaign on Saturday between 2:00 pm – 3:30 pm.

Developed by Mats Selen and the PER group at the University of Illinois, Urbana-Champaign, the IOLab is a wireless data acquisition system which interfaces with a PC/Mac using a USB dongle from up to 100 ft away. It is small (3 cm x 7.5 cm x 13 cm) and light (less than 200 g), which makes it highly portable.

The IOLab contains more than twenty sensors or inputs, including a 3D accelerometer, a 3D magnetometer, a 3D gyroscope, wheels which record position, velocity, and acceleration, a force probe, and both analog and digital inputs. Data can be analyzed in the IOLab program itself, or can be output to a spreadsheet or other software.

Some of the many applications of the IOLab are measuring force, acceleration, velocity, and displacement in mechanics labs, measuring voltage drop, current, magnetic field in EM labs, and measuring light and sound in wave labs.

In the first half of the workshop, participants will work in groups checking out activities in mechanics, EM, and light. In the second half, participants will get a chance to follow their curiosity and explore the many possibilities that the IOLab offers. Participants should bring a computer so they can work with the IOLab on their own computer.

For more information see the [IOLab channel](#) on YouTube and the [IOLab website](#).

Please consider attending this meeting to learn more about physics and discover new tools and techniques for teaching physics. Share your experiences – contribute presentations and Take Fives; and meet old and new friends.

Registration information and deadlines –

- The registration fee for faculty is \$40. After October 13, the registration fee for faculty will be increased by \$5.
- Registration is free for students, guests, invited guests, and 10 first-time attendees each from Illinois and Wisconsin.
- **Lunch on Saturday, October 21 is free for all attendees.**
- The deadline for banquet reservations is Friday, October 13.

For more up-to-date information please visit the [meeting website](#).

Total Solar Eclipse of August 21st Is Now History



Many of us waited years, some decades, to view the August 21st total solar eclipse. The total solar eclipse is now history. Most of those who viewed totality from southern Illinois were not in the least disappointed (except for a large crowd at Carbondale that got clouded out at the moment of totality), despite the fact that we were part of perhaps the largest mass movements of people in American history!

It's clear that the turnout in many areas of the country far exceeded expectations. Many of my astronomy club's members took 7-8 hours to return home whereas it only took only about 4 hours to make it to our observing sites. The majority of the club's members observed from Camp Ondessonk just south of Ozark, IL.

On Sunday, I presented two eclipse talks, *The Total Solar Eclipse of 2017* (attended by nearly 500) and *How to Properly Observe the Solar Eclipse* (attended by about 200). Both talks were very well received. Following each of these plenary talks, more than 30 audience members eagerly donated \$10 to acquire one of my 24-page eclipse guides if as nothing more than a keepsake for this wondrous event.

In addition, three astronomy club members conducted three 40-minute Sunday morning workshops titled *Illumination, Shadows, and Eclipses*. During these presentations, our trio explained the differences between umbral, penumbral, and antiumbral shadows, and how they relate to seeing total, partial, and annular solar eclipses.

Not only did our members present talks and co-host two observing sessions on Saturday and Sunday evenings, they also hosted an eclipse viewing session on Monday.

Despite the weekend's high temperatures, atrocious humidity, and 100+ heat indices, as well as a constant haze and passing clouds, and even a passing thunderstorm the evening before, observers were treated to a spectacular eclipse as Monday dawn arrived clear and bright as seen from Camp Ondessonk.

More than anything else, totality's extensive corona and hedgerow prominences really impressed me. The forecast for the intensity, size and locations of the corona's three major streamers were spot on. With the sun near sunspot minimum, I had anticipated a small corona but was greatly amazed by what I saw! The corona was much larger than I'd seen at any other eclipse.

A hedgerow prominence, extending from about the 12 to 3 o'clock positions on the sun's face, shone with a beautiful pink glow and grew in prominence as totality drew to a close. A large loop prominence protruded from around the 4 o'clock position. I was similarly impressed by a very bright, thin band of light seen around the moon's disk, something I've never seen before. Fortunately, several photographs were able to pick this up in their images.

I observed most of the eclipse phenomenon from the first to the last diamond ring using as set of 6x30 binoculars with no eye discomfort or damage. The field of view of the binoculars matched the angular size of the sun's corona perfectly!

Another thing that impressed me was the suddenness with which it became dark during the last minute or so of the partial phase. The rapidly approaching umbra and growing darkness gave me a surreal feeling.

I was somewhat taken aback by how bright the sky was during totality. Instead of blackness, I recall a cerulean hue. My recollections of the sky during the 1994 eclipse from Bolivia and the 2006 eclipse near the island of Crete were that it was much darker during those times. In Bolivia, the sky was jet black during totality, which probably was due to the fact that we observed from such a high altitude (13,300 feet) that roughly half of Earth's atmosphere was below us.

The poor sunset colors near the horizon were disappointing. There was no discernable evidence of the umbral shadow in the sky as it passed over our site – something I considered a bit surprising given the thin cirrus clouds present in the sky. It was nice to see Venus, Jupiter, and Regulus in the darkened sky with the sun. Unfortunately, I didn't notice Mars and Mercury.

I, as others, felt overwhelmed by the fact that there was so much to see – lots of occurring at the same time in such little time – 2 minutes and 38 seconds roughly. One naturally finds oneself overwhelmed.

In the end, I feel that I was as deeply touched by the eclipse as I was by the number of people who congratulated *me* (!) on this eclipse, stating it was one of the most beautiful things they had ever seen. I pointed out that I was only the spokesman for a considerably greater power. I was awestruck too by the number of people who approached me with tears streaming from their eyes and with emotion-filled voices. Clearly, they had experienced something spectacular and they both knew and appreciated it. Many remarked that totality was one of the most amazing and beautiful events they had ever witnessed. They were very thankful to the TCAA and the CUAS for making this

“eclipse camp” possible.

A sense of thrill and camaraderie pervaded the entire weekend, along with a sense of concern about whether or not there would be a clear sky on Monday. Adding to the festive nature of this event, the staff of Camp Ondessonk took pains to provide TCAAers with special amenities – not the least of which was great air conditioning in the lodge where members slept.

Those who did not experience this eclipse will rue the day when they hear others speak glowingly about it even years from now. I am reminded of the words King Henry V uttered to the English army shortly before the Battle of Agincourt, on the Eve of St. Crispin's Day, and as put forth by the Bard:

*We few, we happy few, we band of
brothers;
For he today that sheds his blood with
me
Shall be my brother; be he ne'er so vile,
This day shall gentle his condition;
And gentlemen in England now a-bed
Shall think themselves accurs'd they were
not here,
And hold their manhoods cheap whiles
any speaks
That fought with us upon Saint Crispin's
day.*

~William Shakespeare

- [Carl Wenning](#), Illinois State University.

The author is an Instructional Assistant Professor (retired) at Illinois State University in Normal, IL. Among many other responsibilities he serves as the Secretary & Director/Historian/Editor of Twin Cities Amateur Astronomers (TCAA). He received the ISAAPT Distinguished Service Citation in 2000.

Future ISAAPT Meetings

- Fall 2017: Oct 20 – 21, Rockford University, Rockford, IL. Joint meeting with the Wisconsin Section of AAPT.
- Spring 2018: Apr 27 – 28, Southern Illinois University, Edwardsville, IL

Chicago section meetings

- Fall 2017: Nov 18, Lewis University, Romeoville, IL

More information:

<https://sites.google.com/site/chicagoaapt/>

Future national AAPT meetings

- 2018 Winter Meeting, January 6-9 (San Diego, California)
- 2018 Summer Meeting, July 28-August 1 (Washington, DC)
- 2019 Winter Meeting, January 12-15 (Houston, Texas)

More information:

<http://www.aapt.org/Conferences/meetings.cfm>

APS Prairie section meeting

- Fall 2017 – to be announced

More information:

<http://www.aps.org/units/psaps/index.cfm>

AAPT NEWS eNNOUNCER

<http://www.aapt.org/aboutaapt/ennouncer/index.cfm>

ISAAPT membership listserv

To subscribe, see the instructions on this [webpage](#).

Connect with ISAAPT

ISAAPT is now on the social media websites! Please consider joining and/or following us on:
Facebook group: search “Illinois Section of the American Association of Physics Teachers”
Google+ page: search “ISAAPT”
Twitter feed: search “ISAAPT@IllinoisSecAAPT”

The contact for these social media sites is Cherie Lehman, cblehman@eiu.edu

ISAAPT Guidebook Program

<http://helios.augustana.edu/isaapt/guidebook.html>

Outstanding High School Physics Teacher Award

2016-2017 Illinois Outstanding High School Physics Teacher Award will be given to Michael McHale, Byron High School, Byron, IL. Congratulations! The award will be presented during the banquet on Friday evening at the Joint meeting of ISAAPT and WAPT at Rockford University. For a list of past awardees visit the ISAAPT [website](#).

The award for Outstanding High School Physics Teacher is presented at our Fall meetings. Fellow teachers and school administrators who are aware of exceptional performance and enthusiastic student response are encouraged to fill out the online nomination Form on the [ISAAPT website](#). Those who are nominated were notified by email from Zak Knott, and asked to fill out the online [Candidate Information Form](#). **Nominations for Outstanding High School Teacher award will be accepted from October 23, 2017 to January 26, 2018.**

Previous nominations will be maintained for three years for consideration for future awards.

Call for Nominations for the 2017 Distinguished Service Citation

The distinguished service citation recognizes outstanding contributions to the field of physics teaching in the state of Illinois. Special recognition is given in the areas of:

- leadership of colleagues and students through physics teaching
- professional contributions to section activities through contributed papers, workshop presentation, committee service, or elective office
- distinguished service at the teacher's home institution.



Morten Lundsgaard of University of Illinois, Urbana-Champaign receiving the 2016 Distinguished Service Citation. (*photo credit – Dave Renneke*).

Morten Lundsgaard of University of Illinois, Urbana-Champaign received the 2016 Distinguished Service Citation. The 2016 award was presented at the spring 2017 meeting at Eastern Illinois University. A list of [past awardees](#) can be found in the ISAAPT website.

Each year, the ISAAPT Executive Council solicits nominations for the Distinguished Service Citation. We invite and encourage you to nominate a fellow colleague for the 2017 Distinguished Service Citation to be presented

at the Spring ISAAPT meeting. **Please send your nomination by December 1, 2017 to Doug Brandt, debrandt@eiu.edu.** The [guidelines and procedures](#) for the citation can be found in our [website](#).

Announcement

On October 10th at 4:00 pm, in Illinois State University's Moulton Hall, room 214, Rebecca Lindell will be speaking at the ISU Physics Department colloquium on the topic of physics education research (PER). Dr. Lindell is very widely known in the PER community. She is both a very active researcher and a conference organizer. She is frequently consulted about PER research and applications of PER and AER in teaching. In addition, she is engaged in teacher education and training in physics and astronomy.

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