

Thank you for joining us today

April 10, 2021

CO/WY AAPT Virtual Spring Meeting

Connecting Teachers in a Physically-Distant World

Hosted by

Mariana Lazarova (University of Northern Colorado),

Zachary Armstrong & Taylor Plantt (Greeley West High School)

www.cowyaapt.org/spring2021



Land Acknowledgement

The University of Northern Colorado occupies the lands in the territories of the Ute, Cheyenne, and Arapaho peoples. The University acknowledges the 48 tribes that are historically tied to the state of Colorado. Thus, the land on which UNC is situated is tied to the history and culture of our native and indigenous peoples. UNC appreciates this connection and has great respect for this land. Additionally, the University community pays its respect to Elders, past, present, and future, and to those who have stewarded this land throughout the generations.

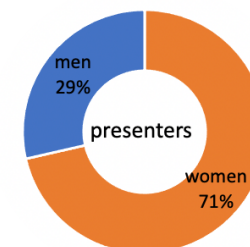
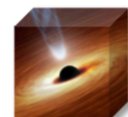


UNIVERSITY OF
NORTHERN
COLORADO

Schedule & Logistics

available online: <http://www.cowyaapt.org/spring2021/>

8:30	Welcome & Logistics
8:40	Discussion forum: Virtual Meet & Greet
9:00	Invited workshop: Mindfulness & Empathy in the Science Classroom (Nadene Klein)
9:50	Break (5 min)
9:55	Contributed workshop: #LeadshipGoals (Nicole Schrode & Shannon Wachowski)
10:25	Business meeting
10:55	Break (5 min)
11:00	Contributed talk: A Question of Modalities (Suzanne Taylor)
11:15	Invited workshop: STeLLA: Science Teacher Learning from Lesson Analysis (Connie Hvidsten)
12:05	Lunch break
12:50	Discussion forum: What the heck is that? (Courtney Willis)
1:00	Contributed talk: Raising the Bar in an Alternative Setting (Nadene Klein)
1:15	Contributed short talk: Exploring the Details of Rainbow Formation with GeoGebra (David Chandler)
1:20	Contributed short talk: Sensor Cart Physics (Roger Larson)
1:25	Contributed short talk: Where do heavy R-process elements come from? (Caroline Leach)
1:30	Invited talk: Galactic black holes & the 2020 Nobel Prize in Physics (Mariana Lazarova)
1:55	Break (5 min)
2:00	Contributed workshop: Teaching Waves with PEER Physics Open Source Resources for General Physics (Emily Quinty & Shelly Belleau)
2:45	Break (5 min)
2:50	Invited talk: Effective traditional and virtual education outreach (Brian Jones)
3:40	Break (5 min)
3:45	Discussion forum: DIY @ Home Demo Show & Competition (Mariana Lazarova)
4:15	PRIZE drawing & Farewell



Nadene Klein

a science teacher from DC Oaks High Schools, will lead a workshop on incorporating Mindfulness and Empathy Practices in the Secondary Science Classroom. For some students, science is a high stress class, especially when math is involved. It can be for the teacher too. This workshop will share some strategies to use mindfulness and elicit empathy from students that can be interwoven in the science classroom. The goal is to help reduce stress and refocus your class.

Dr. Connie Hvidsten

a science educator from BSCS, will introduce STeLLA: Science Teachers Learning from Lesson Analysis. In this session, we will explore the power of video analysis to improve teachers' understanding of strategies that deepen student understanding and critical reasoning. The STeLLA program has been researched for more than 15 years and been shown to improve both teaching practice and student learning. Participants will be introduced to a library of video resources that can be used by school science departments, school coaches, district PD providers, universities and others involved in improving physics instruction.

Brian Jones

director of the Little shop of Physics and Colorado State University physics instructor, will share insights about effective traditional and virtual education outreach.

Dr. Mariana Lazarova

an assistant professor at the University of Northern Colorado, will shed some light on galactic supermassive black holes (they are black holes, so I hope you don't expect any light coming back!) and the 2020 Nobel prize in Physics, particularly highlighting Dr. Andrea Ghez – only the fourth woman to win the prize – and her work on the black hole in the center of the Milky Way.

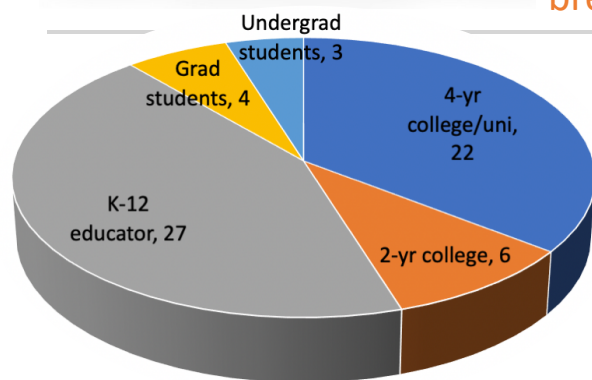
CO/WY AAPT Virtual Spring Meeting

Meet & Greet



8:40 - 9:00 AM

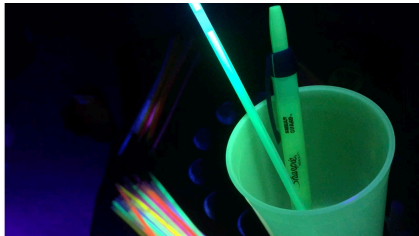
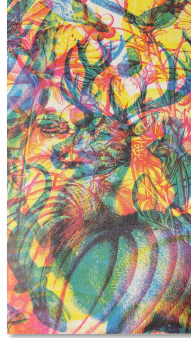
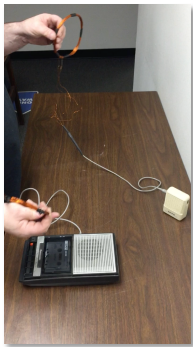
breakout rooms





Meet & Greet

Join a breakout room of your choice



Invited workshop

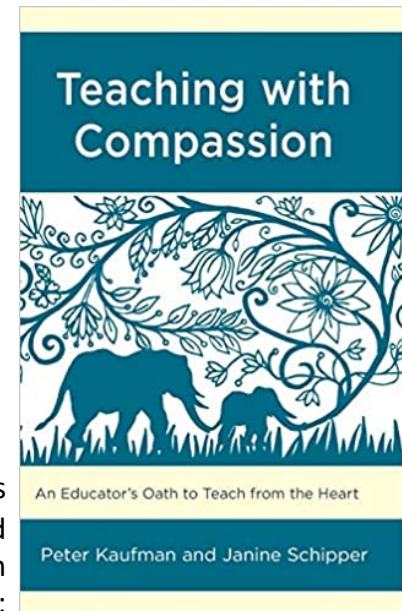


Mindfulness & Empathy in the Science Classroom

Nadene Klein (Daniel C. Oakes High School)

9:00am- 9:50am

Mariana's
recommended
resource on
the topic:



Short Break (5 min)



Next... 9:55am

#LeadershipGoals workshop

Contributed workshop

#LeadershipGoals

Nicole Shrode (SVVSD and PEER Physics) &

Shannon Wachowski (Science & CTE Consultant at the Wyoming Department of Education and PEER Physics)



Next... 10:25am

Business meeting

Business Meeting

Samantha Ogden (President of CO/WY AAPT)



10:25 am-10:55 am



President:

- Samantha Ogden, University of Wyoming (term: 2019-2021)

President-Elect:

- Jasmine Andersen, University of Denver, (term: 2019-2021)

Vice Presidents:

- Mariana Lazarova, University of Northern Colorado (term: 2019-2021)
- Zach Armstrong & Taylor Plantt, Greeley West High School (term: 2019-2021)

Secretary/Treasurer:

- Grant Denn, Metropolitan State University, Denver (term: 2019-2021)

Section Representative:

- Vince Kuo, Colorado School of Mines (term: 2018-2021)

Past President:

- Grant Denn, Metropolitan State University, Denver (term: 2019-2021)

Webmaster:

- Adam Pearlstein, Little Shop of Physics, Colorado State University (term: 2019-2021)

Members-at-Large:

- Matt Leach, Douglass County High School (term: 2019-2021)
- Paul Marquard, Casper College (term: 2019-2021)
- Zach Armstrong, Greeley West High School (term: 2018-2021)

Short Break (5 min)



Next... 11:00am

Contributed Presentations

Contributed presentation

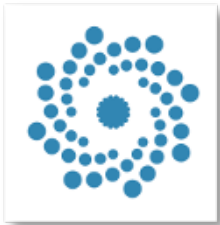
A Question of Modalities

Suzanne Taylor (Western Colorado University)



11:00-11:15am

Invited workshop



STeLLA workshop: Science Teachers Learning from Lessons Analysis

Dr. Connie Hvidsten (BSCS, Colorado Springs)

11:15-12:05pm

Lunch Break (45 min)



Next... 12:50pm



What the heck is that?

Discussion forum: select your breakout room

What the heck is that?

Dr. Courtney Willis (Emeritus Professor, UNC)



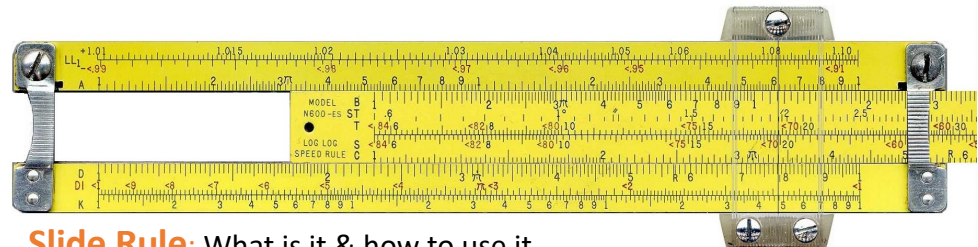
Helmholtz Resonators:
How did we used to identify specific sound frequencies



Inertial balance:
What is inertial mass & how do astronauts measure their mass when they are weightless



Vacuum tubes:
What are they & what do they have to do with radio waves



Slide Rule: What is it & how to use it



Thornton apparatus: What is this physics equipment at the back of your lab storage & how to use it

12:50pm-1:00pm

Contributed presentations

Raising the Bar in an Alternative Setting

Nadene Klein (Daniel C. Oakes High School)



1:00pm-1:15pm

Contributed short talks

“Exploring the details of rainbow formation using GeoGebra”

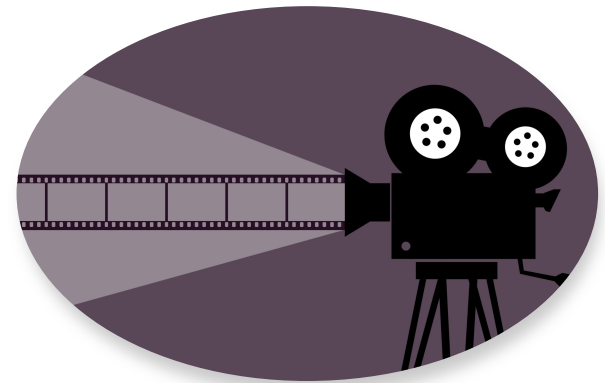
David Chandler (Retired, Math Without Borders)

“Sensor Cart Physics”

Roger Larson

“Where do heavy r-process elements come from?”

Caroline Leach (University of Denver)

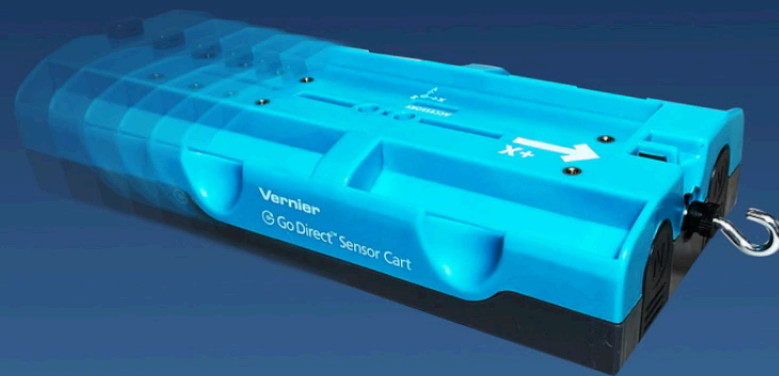


1:00pm-1:15pm



SENSOR CART PHYSICS

Vernier Graphical Analysis™ Pro Edition



Roger F. Larson | STEM
SOLUTIONS |

roglarson@comcast.net



GWR & Heavy Elements

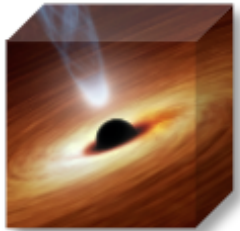
Where do R-process Elements come from?

Caroline Leach

Advisor: Dr. R. Stencel

Undergraduate Physics Student | University of Denver

Invited talk



Galactic Black Holes & the 2020 Nobel Prize in Physics

Dr. Mariana Lazarova (University of Northern Colorado)

1:30 pm-1:55pm

Short Break (5 min)



Next... 2:00pm

PEER Physics workshop

Contributed workshop

Teaching Waves with PEER Physics Open Source Resources for General Physics

Emily Quinty & Shelly Belleau (PEER Physics, CU Boulder)



Short Break (5 min)



Next... 2:55pm

Effective Outreach

Invited talk



Effective traditional and virtual education outreach

Brian Jones (Colorado State University)

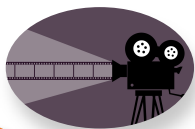
2:50pm-3:40pm

Short Break (5 min)



Next... 2:55pm

Demo show & Competition



Demo show – DIY @ home



Next... 4:10pm

Demo Competition

Demos Competition

Diffraction from Post-It notes

Conner Leftwich (CSU)

Pressure in a bottle with balloon

Brenna Sydow (CSU)

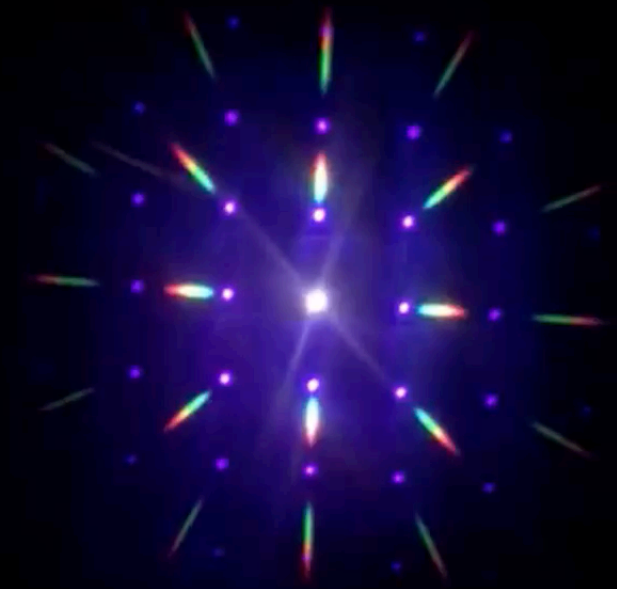
Rubens' tube

Adam Perlstein (CSU)

Scattering of light

Mariana Lazarova (UNC)





Connor Leftwich (CSU)

Brenna Sydow (CSU)

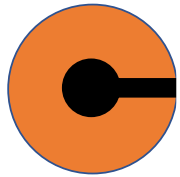




Adam Pearlstein (CSU)

Mariana Lazarova (UNC)





2021 CO/WY AAPT

Thank you for being part of it

www.cowyaapt.org/spring2021



Prize drawing:

- best demo
- attendance