

E.L.I.P.S.E. 9.0

**Experiential Learning and Inquiry for
Physical Science Educators**

**GSTA District 2 & 12 Science Teachers
Brenau University and UNG**

**University of North Georgia
Gainesville Campus – Science Building**

**3820 Mundy Mill Rd. Gainesville
30503**

**Saturday, January 28, 2023
from 8:30a.m. – 4:00p.m.**

**Registration : <http://georgiascienceteacher.org>
Share photos with elipse.conference@gmail.com**

MISCELLANEOUS INFORMATION

- UNG Police contact information: (706) 864-1500 or publicsafety@ung.edu
- Need a PLU? Email April.Nelms@ung.edu your full name and mailing address. Put “ELIPSE 9.0 PLU” in subject line.
- Wifi Username: ELIPSEguest Password: Nighthawk2023!
- Conference presentations at: <http://bit.ly/3XszHnu>

Agenda – Saturday January 28th 2023

REGISTRATION, 8:00AM TO 8:55AM

REGISTRATION AND BREAKFAST
SCIENCE BUILDING ATRIUM

PLENARY SESSION, 9:00AM TO 9:55AM

WELCOME AND OPENING REMARKS
GAINESVILLE SCIENCE & TECHNOLOGY, ROOM 103
AMANDA MOFFETT
ELIPSE CONFERENCE COMMITTEE

OPENING PLENARY SESSION
“MEASURING THE MASSES OF MONSTER BLACK HOLES”
MISTY BENTZ

One of the lasting legacies of the Hubble space telescope is the discovery that every galaxy has a supermassive black hole lurking in its center. Furthermore, these black holes and their host galaxies seem to have a symbiotic relationship in which they grow and evolve together over cosmic time. One of the keys to understanding this relationship involves measuring the masses of the black holes and thus constraining the strength of their influence. However, weighing an invisible object in the center of a galaxy that is millions or billions of light years away is challenging. I will describe the basic principles behind our current techniques and summarize the state of such measurements. Future improvements in our current techniques will affect our understanding of how black holes participate in galaxy growth and evolution, helping to shape the structure of our universe, as well as our own milky way galaxy, over the last 14 billion years.

CONCURRENT SESSIONS STARTING AT 10:10 AM

Alec Johnson – (6-12)

Presider: Jane Reed

Room: 202

Seeing the Unseen - Phenomenal Activities exploring the EM spectrum and Connections to Astronomy Research

Interaction with invisible light is an everyday occurrence, yet students are unfamiliar with the phenomenon. This workshop will involve participants learning about the NASA/SETI Astronomy Activation Ambassadors program partnership with Morgan County Schools, the connection between physical science concepts and current astronomy research, and how they can apply to join the AAA program or get the full curriculum that released in August 2022. Attendees will participate in small group learning that will include 1) a multi-wavelength astronomy image probe, 2) classroom activities to explore filtering by wavelength using LEDs and color filters, 3) detection of visible and invisible (infrared) light emitted with Smartphone cameras and photovoltaic cells, and 4) exploring spectroscopy. Participants will use the CER format to explain the presence of invisible light and construct a model to explain the detection of visible and infrared light. Participants will then elaborate on cross-cutting concepts through the astronomical research lens with time for final thoughts and questions regarding anything in the workshop.

Karen Henman and Julie Carbaugh - (K-5)

Presider: Laura Cantu

Room: 213

Perfect Pairs: Using Fiction and Nonfiction Picture Books to Teach Science

In this session, you will learn about integrating both fiction and nonfiction picture books in elementary classrooms into lessons along with some engaging hands-on activities. Topics in this session include heat, forces, moon, light, and sound.

Logan Kageorge – (9-12, College)

Presider: Amanda Moffett

Room 216

Physics Gone Mobile - Using phyphox to Bring Science Education to the Palm of Your Hand

Students often feel a great disconnect between what they learn in the physics classroom and the world they interact with. Many traditional physics labs aid in teaching the classroom physics principles, but using equipment that is not typically accessible to students outside of school fails to close the gap between the classroom and real life. In this session, participants will learn how to build a lab around phyphox, a free mobile app for Android and iOS, that helps students understand concepts like acceleration, pressure, wave interference, and more.

SESSION 2 – 11:10 – NOON

Kathryn R. Mullen – (6-12)

Presider: Denise Webb

Room: 202

Using Phenomena to Teach Physical Science

This presentation will look at various phenomena to teach both Chemistry concepts taught in Physical Science Classroom. We will complete some hands on activities, talk about literacy strategies that can be used with phenomena, and explore places where phenomena ideas can be found.

Simeon Salia – (6-12)

Presider: Karen Henman

Room: 213

STEP Guide

I will teach teachers to create programs similar to the STEP program at Georgia Institute of Technology.

Laura Cantu and Kandi Fisher – (K-8)

Presider: Frank Lock

Room: 216

Literacy Through the Engineering Lens

This presentation will include information on integrating engineering practices into literacy instruction. It will include the use of children's literature to promote and use engineering practices in teaching literacy skills. Presenters will also include information about the pedagogy of how engineering and literacy can be connected in the classroom. There will be hands-on activities to engage participants in experiencing these practices first hand.

David Osmond – (6-12)

Presider:

Room: 232

Matchstick Rockets!

Safety glasses? CHECK! We are going to be making and launching some simple matchstick rockets. This is a great explore activity or can be used for an in-depth elaboration on forces of motion. Come play with fire as we learn some hands-on physics.

LUNCH – NOON – 12:50 PM

Science Building Atrium

Jacqueline Velasquez Carrion, Sophia Darling, Veronica Suarez Coterro, and Max Vazquez Dominguez (K-8)

Presider: Katheryn R. Mullen

Room:202

Using engineering to build a conveyor belt

Participants will construct a conveyor belt using the engineering design model, collaborate to complete a challenge using their machine, and evaluate their prototype.

Denise Webb and Amber Hoke (K - 12)

Presider: David Osmond

Room: 216

Staging Family Science Nights

A successful Family Science Night is a perfect coming together of informal science learning, community support, and schoolwide excitement. Come find out how to start or step up your STEAM family program. Target audience K-12!

Clare Swinford and Patricia Forehand (K-5)

Presider: Leslie Simanton-Coogan

Room: 213

Junior Ranger Space Tech & Spaceflight Explorers

Calling all junior explorers! NASA partnered with the National Park Service to create the "Junior Ranger Space Tech Explorer" and "Junior Ranger Spaceflight Explorer" activities. The activities were made originally to celebrate of the 50th anniversary of Earth Day and the Apollo moon landing. The activities explore what NASA and our national parks have in common and how space technology benefits your life, parks and the planet. Learn about the Moon, space vehicles that will take humans to the Moon and to Mars, and national parks across the United States. With the use of Ozobots, activities will focus on craters and landforms.

Amanda Moffett

Presider: Logan Kageorge

Room: 232

Probability and the Drake Equation

The Drake Equation is a framework used by astronomers to estimate the number of alien civilizations in the Milky Way Galaxy that might possibly be trying to communicate with our civilization. This is clearly a complex problem to investigate, combining knowledge of astronomy, biology, technology, and history, so the Drake Equation works by combining a series of probabilistic factors, some of which we know reasonably well and others that are highly uncertain. In this session, we will consider the Drake Equation by first introducing basic probability concepts and then applying those concepts to derive our own estimates of the number of communicative alien civilizations in our home Galaxy.

Ted Forringer – (6-12)
Presider: David Osmond
Room: 216

A free online tool for graphing data and fitting a curve to data. And how do we do good curve fitting anyway?

Your presenter has deployed a web-based graphing tool for plotting data from science experiments. In this presentation we will talk about uncertainty in measurements, plotting data, fitting a curve to data and "residuals." Ultimately, we can make an informed judgement "does the scientific theory represented by a curve fit explain the observations represented by the data points?"

Lesley Simanton-Coogan - (K-12)
Presider: Amber Hoke
Room: 232

Modeling Eclipses: Activities about the Sun, Earth, and Moon

In October 2023 and April 2024, there will be two major solar eclipse events partially visible from Georgia. These events are an exciting opportunity to get students thinking about the three ingredients for an eclipse: the Sun, Earth, and Moon. We'll discuss lunar phases and eclipse geometry and try out hands-on activities for modeling eclipses in the classroom that can be adapted for most grade levels.

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Lorraine Ramirez Villarin – (K-12)
Presider: Jane Reed
Room: 201

Making Sense of the Water Cycle through Sensemaking

Experience learning about the water cycle and how limited freshwater is through "Sensemaking", the latest science instructional approach. Use this sample lesson or elements of it in your classroom.

Frank Lock (6-8, 9-12)
Presider:
Room: 213

Introduction to a Climate Science Investigations Website

The climate crisis is a challenge unlike any humanity has faced. Our students should be informed about climate science concepts to help them prepare to deal with the challenges we will all face together. This presentation will introduce participants to a website the author has titled, "Climate Science Concepts Fit You Classroom." The site

is an extensive instruction manual for teachers, describing activities that can be adapted for use with students in grades 6 - 12. The activities are all related to climate science concepts, and include heat capacity, light energy, energy conservation, temperature, density, seasons on earth, energy transfer and phase change, solutions, osmosis, and many, many more. Participants will work through one of the activities from the site.

DOOR PRIZES / CLOSING SESSION – 3:00 – 3:45 PM

Dr. Karen Henman, Introductions

Justin Harvey, GSTA Executive Director,

Closing announcements, PLU Certificates

Door Prizes!

CONTACT INFORMATION

Misty Bentz	bentz@gsu.edu
Laura Cantu	lcantu@brenau.edu
Julie Carbaugh	jcarbaugh1@brenau.edu
Sophia Darling	sadarl8135@ung.edu
Kandi Fisher	kfisher@brenau.edu
Patricia Forehand	pforehand@museumofaviation.org
Ted Forringer	Ted.Forringer@ung.edu
Justin Harvey	Justin.Harvey@gcpsk12.org
Karen Henman	khenman@brenau.edu
Amber Hoke	ahoke@forsyth.k12.ga.us
Alec Johnson	alec.johnson@morgan.k12.ga.us
Logan Kageorge	lkageorge@brenau.edu
Frank Lock	lockphys@gmail.com
Amanda Moffett	Amanda.Moffett@ung.edu
Kathryn Mullen	davidandkat3@hotmail.com
April Nelms	April.Nelms@ung.edu
David Osmond	David.Osmond@ung.edu
Lorraine Ramirez Villarin	Lorraine.RamirezVillarin@ung.edu
Jane Reed	Jane.reed@gcssk12.net
Simeon Salia	ssalia3@gatech.edu
JB Sharma	JB.Sharma@ung.edu
Lesley Simanton-Coogan	Lesley.SimantonCoogan@ung.edu
Veronica Suarez Cotero,	vrsuar0191@ung.edu
Clare Swinford	cswinford@museumofaviation.org
Max Vazquez Dominguez	max.vazquezdominguez@ung.edu
Jacqueline Velasquez Carrion	jivela0578@ung.edu
Denise Webb	dewebbsciencegal@gmail.com

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Faculty Volunteers
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Post-Conference Survey:

<http://bit.ly/3ZZQsby>



MAKE PLANS TO ATTEND ELIPSE 10.0
ON JANUARY 27TH 2024