

**Fall 2023 Meeting
Southeast PA Section
of the American Association of Physics Teachers**

Friday, October 20th, 2023

7:00 pm - 9:30 pm

**Joint Meeting with the Delaware Valley Amateur Astronomers (DVAA)
Radnor Township Building, 301 Iven Ave., Wayne, PA 19087
Radnorshire Room; use 2nd floor entrance to building**

Invited Speaker:

Paul T. Baker

**Assistant Professor of Physics
Widener University**

Hearing the gravitational wave background with a galaxy sized detector

This past June the North American Nanohertz Observatory for Gravitational Waves (NANOGrav) and other members of the International Pulsar Timing Array (IPTA) published the first evidence for the stochastic gravitational wave background. The observed signal is consistent with one produced by an ensemble of many super massive black hole binaries in distant galaxies. We will discuss sources of very low frequency gravitational waves, and how a pulsar timing array, like NANOGrav, works to detect them. Then we will discuss the signal that NANOGrav observed and compare the findings to those from our IPTA colleagues.

Saturday, October 21st, 2023

8:00 am - 3:30 pm

Widener University

One University Pl, Chester, PA 19013



Invited Speaker

Dr. Eric Brewé, Drexel University

Modeling Instruction, student engagement, and neurobiological impacts

Modeling Instruction is an active learning strategy for introductory physics built on the premise that science proceeds through the iterative process of model construction, development, deployment and revision. We describe the role that participating in a Modeling Instruction class has in learning and then explore how students engage in this process in the classroom. We begin with a background on models and modeling and describe how these theoretical elements are enacted in the introductory university physics classroom. Recent work has been a neuroimaging study of students pre and post instruction. We describe the development of this project, the varied analyses of neuroimaging data in an educational context, and the findings. Among the findings are neurobiological changes pre to post instruction, differences in activation patterns during physics reasoning tasks, and identification of a three-part brain network that correlates with science anxiety during resting state. We conclude with a discussion of future work.