

Implementation Template

Teacher name(s): Mike Hirsh

Activity title or description of what will be implemented:

- (1) X-Ray Astronomy material and presentation
- (2) X-Ray Diffraction Demo

Class(es) in which used:

First Year Physics

(will also include in AP Physics - post AP/enrichment)

Grade Level(s):

Mostly grade 10 (first year)

Connected curriculum topic(s) or practice(s):

Wave properties/electromagnetic spectrum

Reason(s) for choosing:

The waves aspect of our curriculum often comes at the end of the year - it is important to provide engaging applications that will hold student interest.

X-Ray astronomy - as an application for understanding the electromagnetic spectrum - that measuring different types of electromagnetic radiation allow us to understand the properties of stars and nebulae; spectra allow us to determine the composition of stars.

Also - discussion of how the atmosphere interacts with different types of radiation to block ionizing radiation, transmit visible, scatter IR (to produce the greenhouse effect)

X-Ray diffraction - demos a historical application of properties of waves and link to biology with the discovery of the structure of DNA.

Expected challenges or pitfalls, and ideas for overcoming these challenges:

The greatest challenge is ensuring that my understanding of the material is adequate to explain and answer questions - the value of these workshops is for me ask questions and challenge my knowledge (and in many cases find where I had misconceptions) - and to provide me with resources.

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Other comments: