

Beta

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FINDING THE TIME

Because the Earth is tilted on its axis and has an elliptical orbit around the Sun, solar time does not always advance at the same rate. The number of minutes that you add or subtract to convert solar time to standard time varies throughout the year. For example, on October 13, you would have to subtract 14 minutes, and on Christmas the addition is 16 minutes. The difference between solar time and standard time on April 15, June 21, September 23, and December 21

is to subtract from the solar time variation shown on the calendar table the number of minutes shown for the date. For example, on October 13, you would have to subtract 14 minutes, and on Christmas the addition is 16 minutes. The difference between solar time and standard time on April 15, June 21, September 23, and December 21

When Daylight Saving Time is in effect, you have to subtract one hour as well.

SHADOWS ON THE MAP

The shadow of the gnomon on the map indicates where the Sun is in the sky at the time. The length of the shadow indicates the number of degrees East or West of the Gnomon (vertical) line. The point where the shadow intersects the gnomon line

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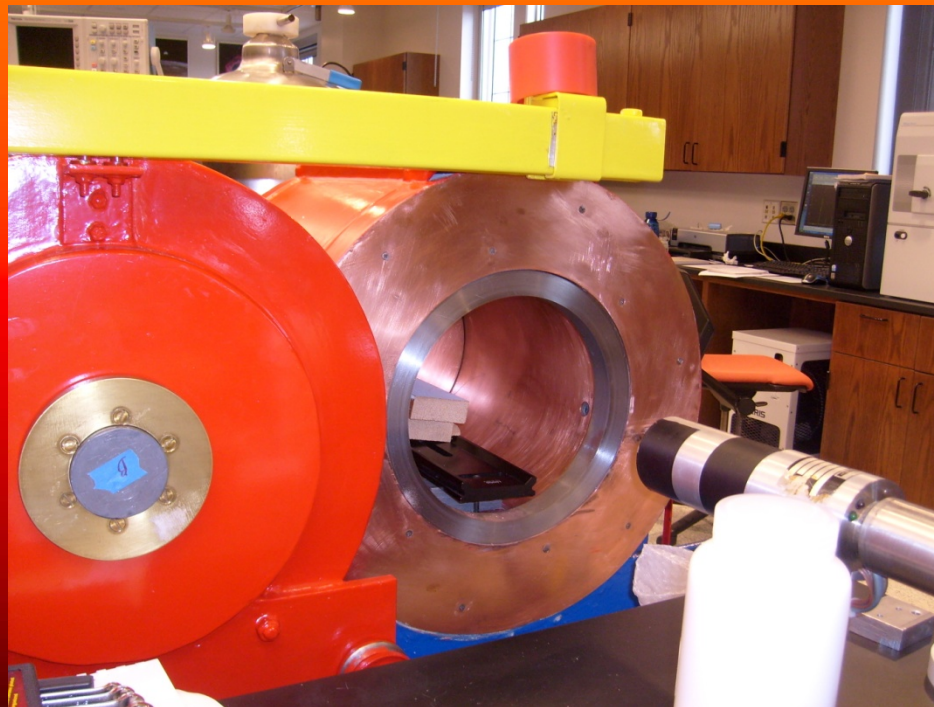
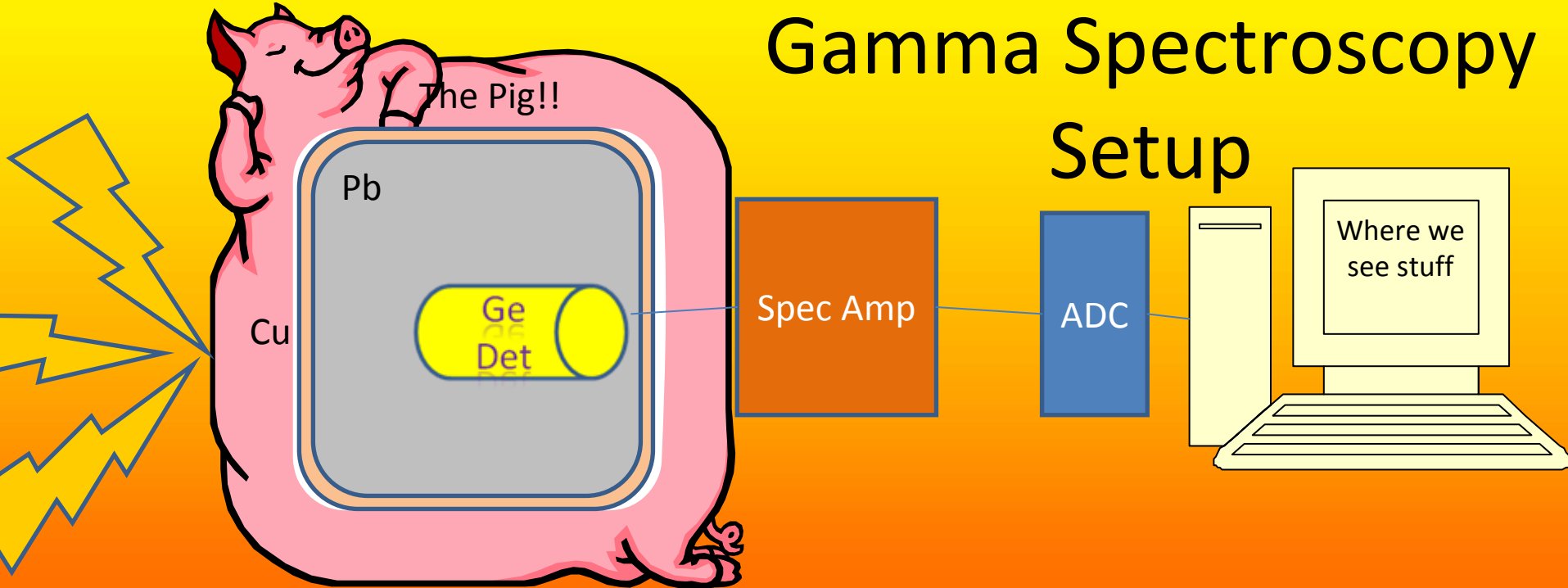
The shadow of the gnomon marks the spot on Earth where the Sun is directly overhead. At the time of the year when the shadow of the gnomon is at its longest, the Sun is at its lowest point in the sky. The length of the shadow of the gnomon on the map indicates where the Sun is in the sky at the time. The length of the shadow indicates the number of degrees East or West of the Gnomon (vertical) line. The point where the shadow intersects the gnomon line

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Gamma Spectroscopy

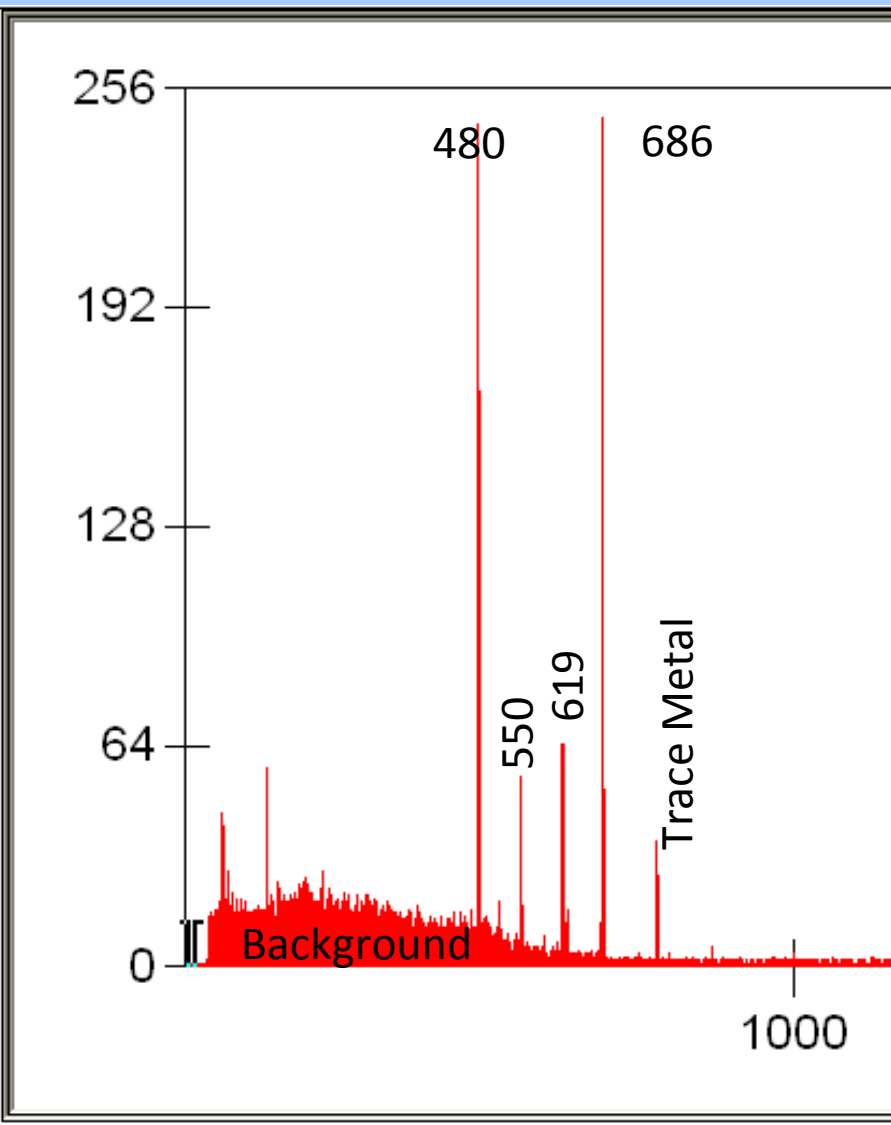
Setup



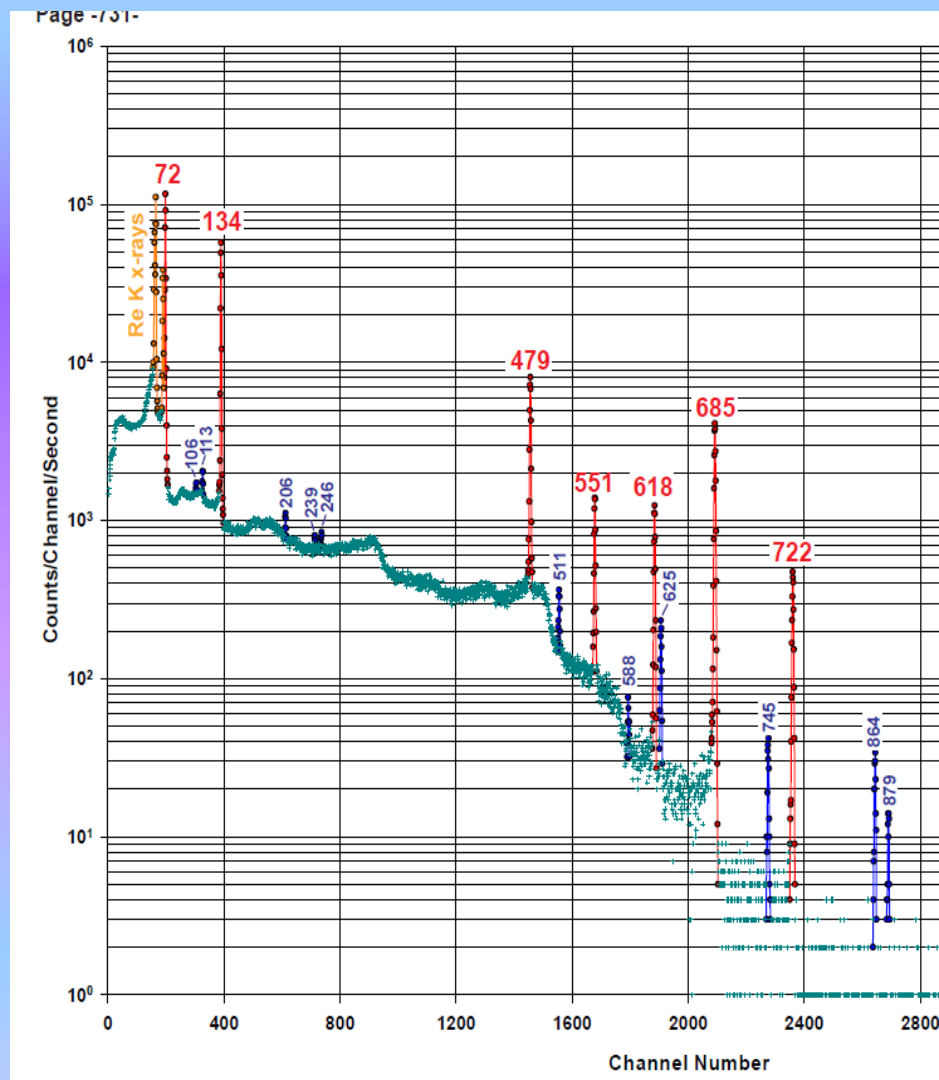


The item is put in the pig. For it to create gamma rays, the atoms must be unstable isotopes decaying in an excited state. The gamma rays given off are read by the germanium detector and converted to be read on the computer.

Identifying Tungsten With Gamma Spectroscopy

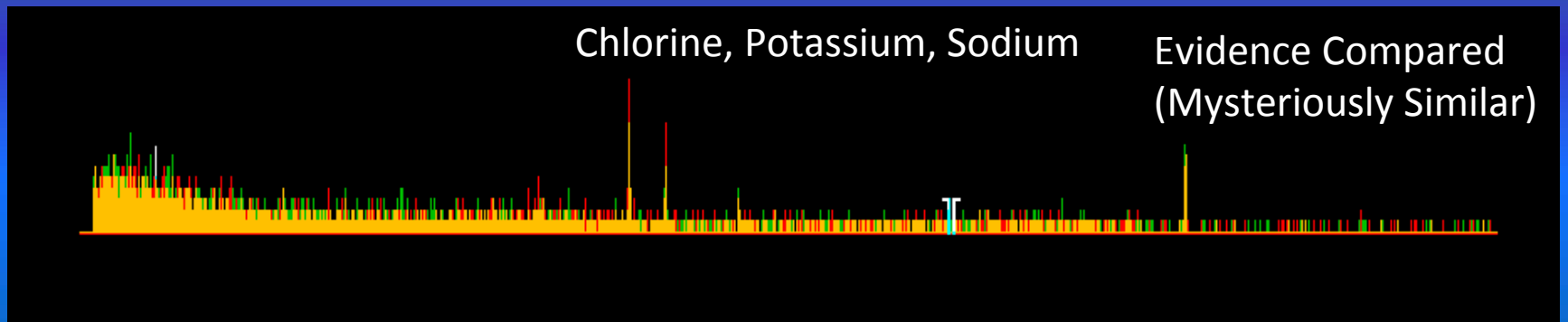
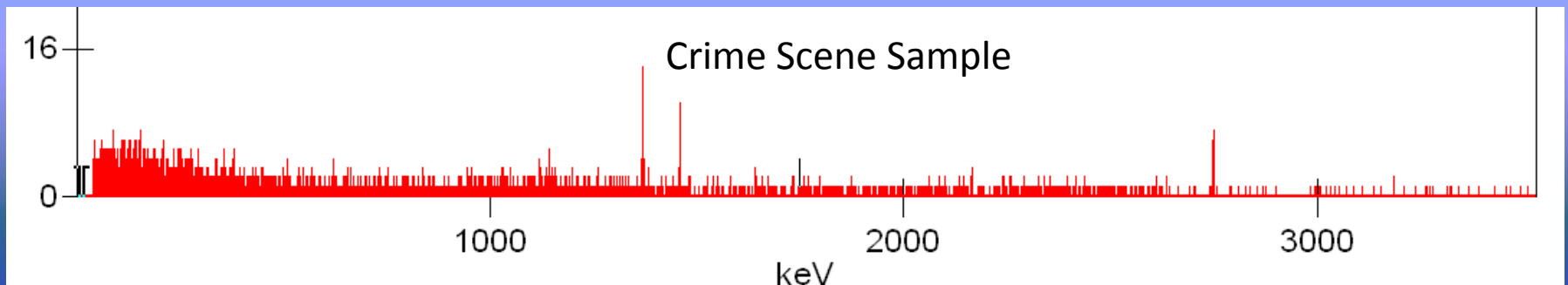
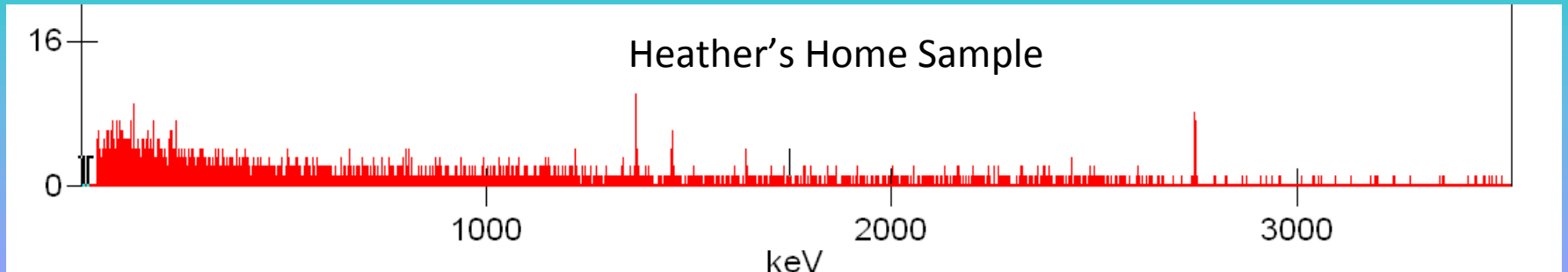


Tungsten 187



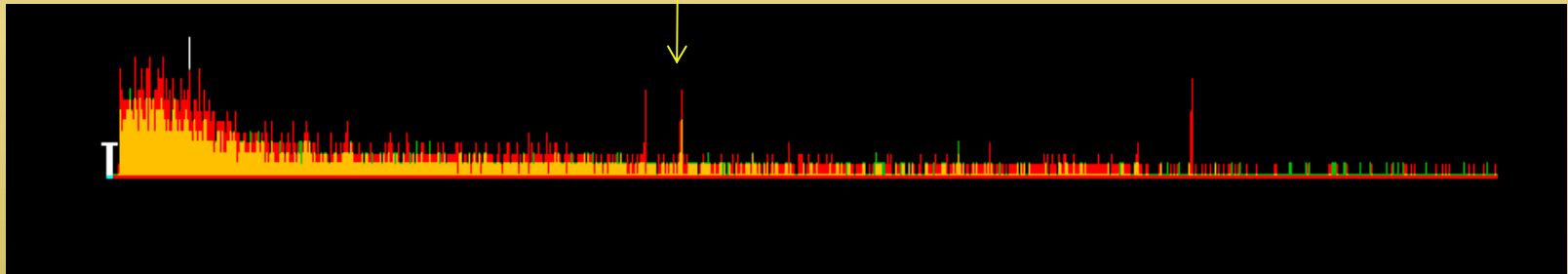
Neutron Source

Gamma Spectroscopy Crime Scrutiny



How we proved that Kelly was innocent.

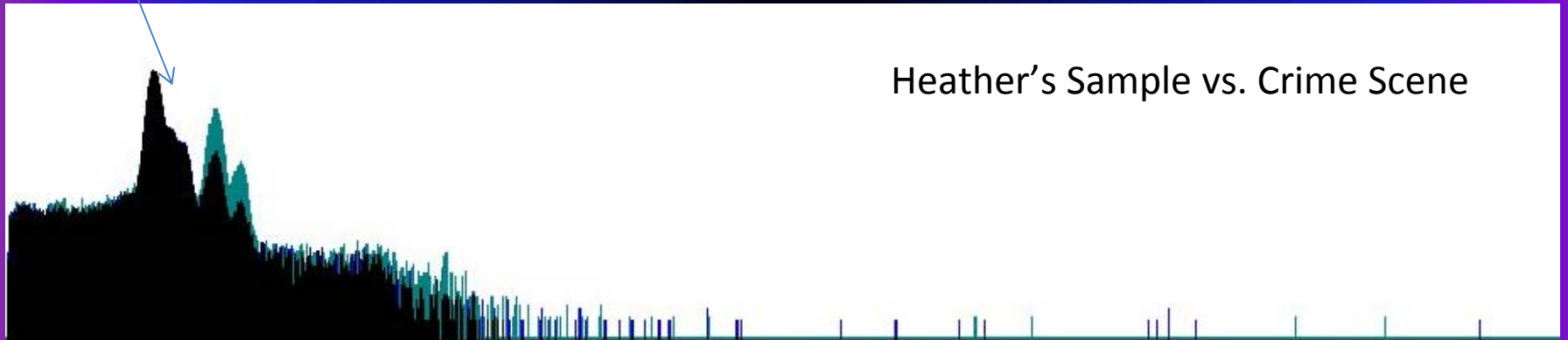
Potassium



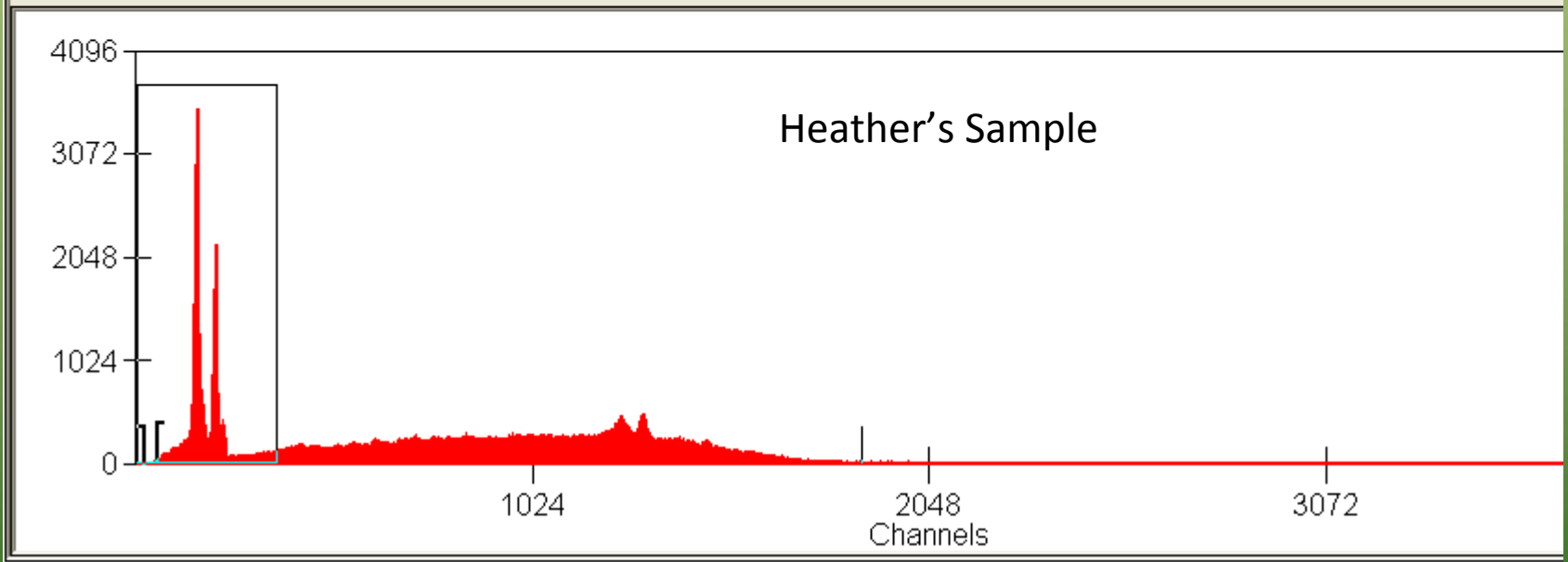
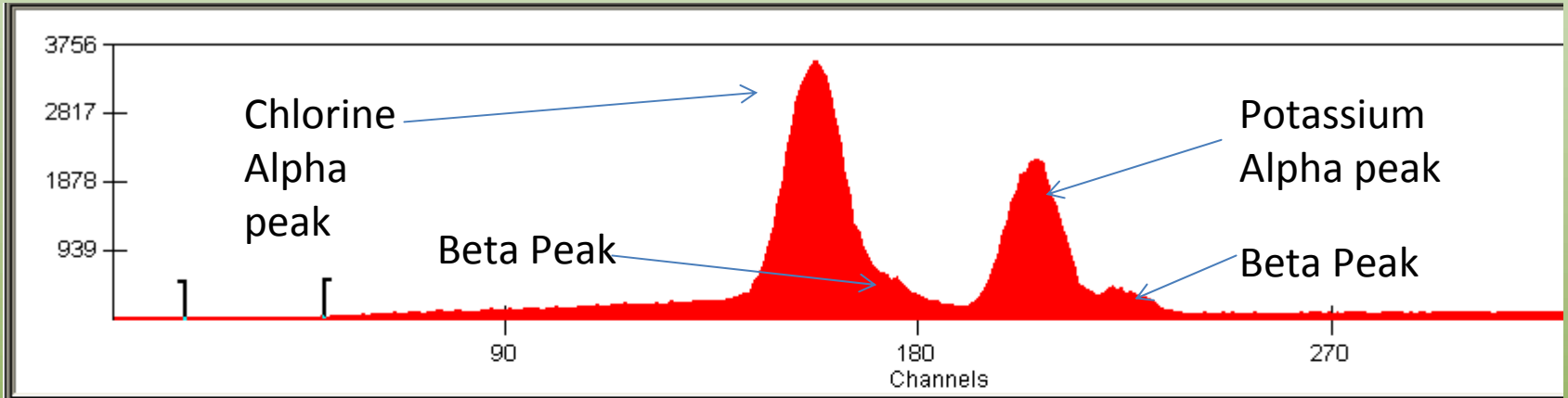
The Crime Scene vs. Kelly's Home

Using PIXE to analyze the evidence

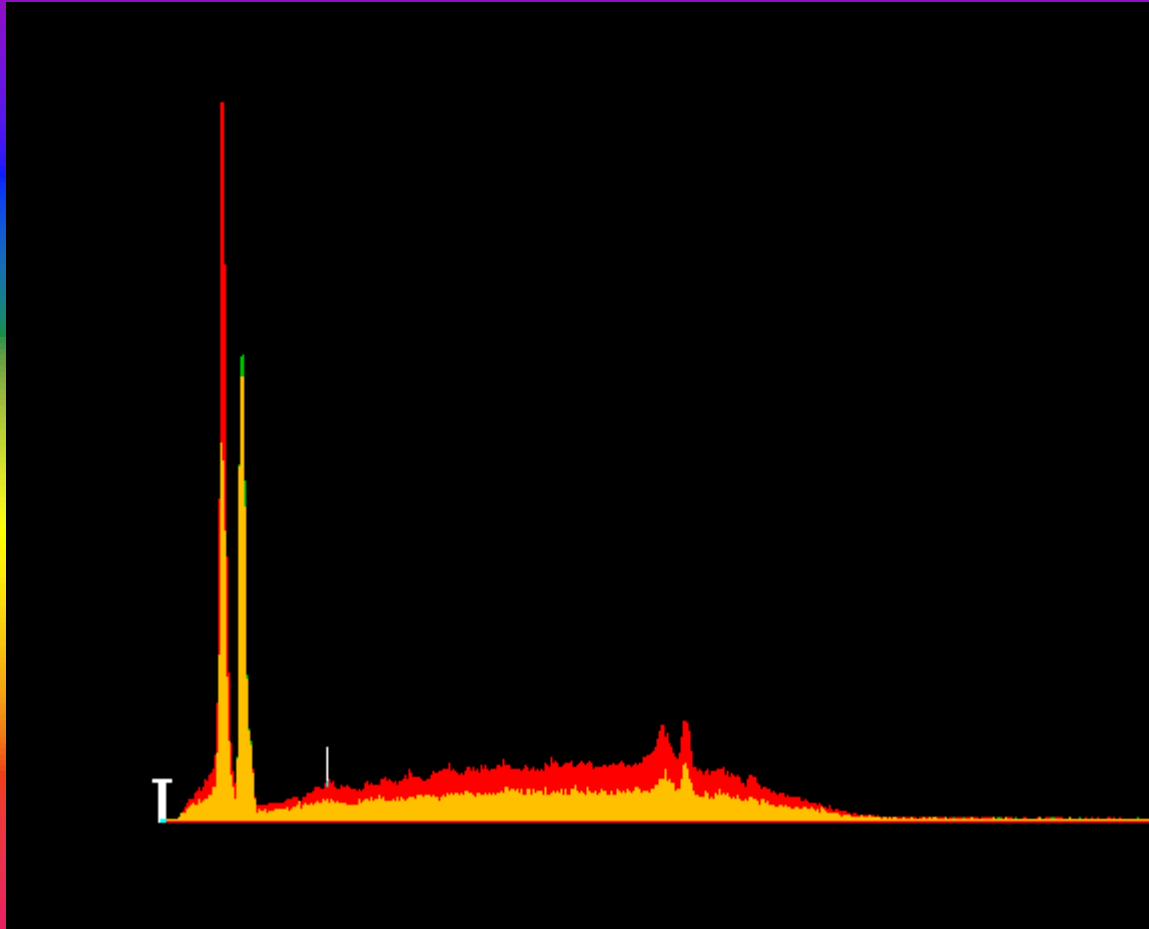
We only found the potassium in the sample using PIXE. The peak on the left is argon from the air.



Analyzing through XRF



Compared



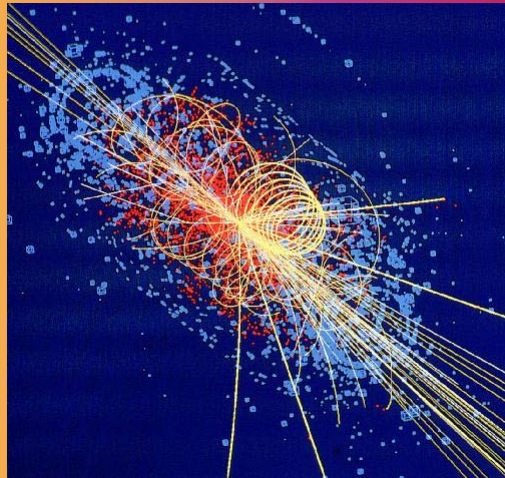
What *really* happened to Dr. Wiescher.

Suspect: Ryan

Weapon:

Radioactive
Arsenic

Motive: Jealous of
Dr. Wiescher's
recent discovery
of the Higgs
particle.



Plotting Face



What we like to think of the Higgs particle as

