

# Simple Harmonic Motion is all around us...

## Quarknet Teacher Workshop “Activity” Module for Seismometers

### 1. Seismometers

- Assembled by INFILTEC
  - By David Saum
  - <http://www.infiltec.com/seismo/inf-qm45.htm>
- Serial to USB port
  - Directions for setting up use Windows 2k\_xp user’s manual.pdf
  - [http://quarknet.fnal.gov/fnal-uc/quarknet-summer-research/QNET2012/project\\_files/teacher\\_files/Windows2k\\_xpusermanual.pdf](http://quarknet.fnal.gov/fnal-uc/quarknet-summer-research/QNET2012/project_files/teacher_files/Windows2k_xpusermanual.pdf)
- Amaseis
  - <http://bingweb.binghamton.edu/~ajones/AmaSeis.html>
  - Using Amaseis
  - [http://quarknet.fnal.gov/fnal-uc/quarknet-summer-research/QNET2012/project\\_files/teacher\\_files/UsingAmaSeis.pdf](http://quarknet.fnal.gov/fnal-uc/quarknet-summer-research/QNET2012/project_files/teacher_files/UsingAmaSeis.pdf)
- WinQuake
  - <http://www.seismicnet.com/software.html#WinQuake>
- Other Seismometers for education
  - Build your own AS1 Seismometers
  - [http://quarknet.fnal.gov/fnal-uc/quarknet-summer-research/QNET2012/project\\_files/teacher\\_files/AS1Amaseis.pdf](http://quarknet.fnal.gov/fnal-uc/quarknet-summer-research/QNET2012/project_files/teacher_files/AS1Amaseis.pdf)

## 2. Sound

### – Loading up Python

- Enthought, Python, free download, for education
- A. Go to the enthought web site <http://www.enthought.com/>  
B. On the left side of the screen click on the EPDFree 7.3  
(one click installs NumPy, SciPy, IPython, matplotlib, Traits & Chaco)  
C. On the next page, Enthought Python Distribution, go to the bottom of the screen, and click on download.  
D. On the next page, EPD Free Installers, select the appropriate file for your operating system, probably the windows file, which is the fourth one listed.

### – Live Audio Spectrum

- [http://quarknet.fnal.gov/fnal-uc/quarknet-summer-research/QNET2012/project\\_files/teacher\\_files/liveaudiospectrum.py](http://quarknet.fnal.gov/fnal-uc/quarknet-summer-research/QNET2012/project_files/teacher_files/liveaudiospectrum.py)
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### – Sounds of the Fermilab Holometer

- File-BeamSplitter Ringing [http://quarknet.fnal.gov/fnal-uc/quarknet-summer-research/QNET2012/project\\_files/teacher\\_files/EndStationThump.wav](http://quarknet.fnal.gov/fnal-uc/quarknet-summer-research/QNET2012/project_files/teacher_files/EndStationThump.wav)
- File-EndStation Thump [http://quarknet.fnal.gov/fnal-uc/quarknet-summer-research/QNET2012/project\\_files/teacher\\_files/BeamsplitterRinging.wav](http://quarknet.fnal.gov/fnal-uc/quarknet-summer-research/QNET2012/project_files/teacher_files/BeamsplitterRinging.wav)
- Link-Holometer music
- <http://www.youtube.com/watch?v=gP9VB-TB2D8>

### 3. Laser Beams

- Experiments with Diffraction
  - [http://www.optics.rochester.edu/workgroups/berger/EDay/EDay2008\\_Diffraction.pdf](http://www.optics.rochester.edu/workgroups/berger/EDay/EDay2008_Diffraction.pdf)
- ABCD Gaussian Beam Propagation Software
  - <http://www.novajo.ca/abcd/>

### 4. Computer Aided Learning

- Virtual Earthquake
  - Run the program at
  - <http://www.sciencecourseware.com/VirtualEarthquake/>
  - Shortcut to my worksheet
- Seismic Eruption
  - Download the program from Alan Jones
  - <http://bingweb.binghamton.edu/~ajones/#Seismic-Eruptions>
- Seismic Waves
  - Download the program from Alan Jones
  - <http://bingweb.binghamton.edu/~ajones/#Seismic Waves>
- Wave Animations
  - Very nice presentation with cool animations by Larry and Sheryl Braile.
  - <http://web.ics.purdue.edu/~braile/new/SeismicWaves.ppt>