SLAC
NATIONAL ACCELERATOR LABORATORY

Vibration Measurements of Concrete Blocks

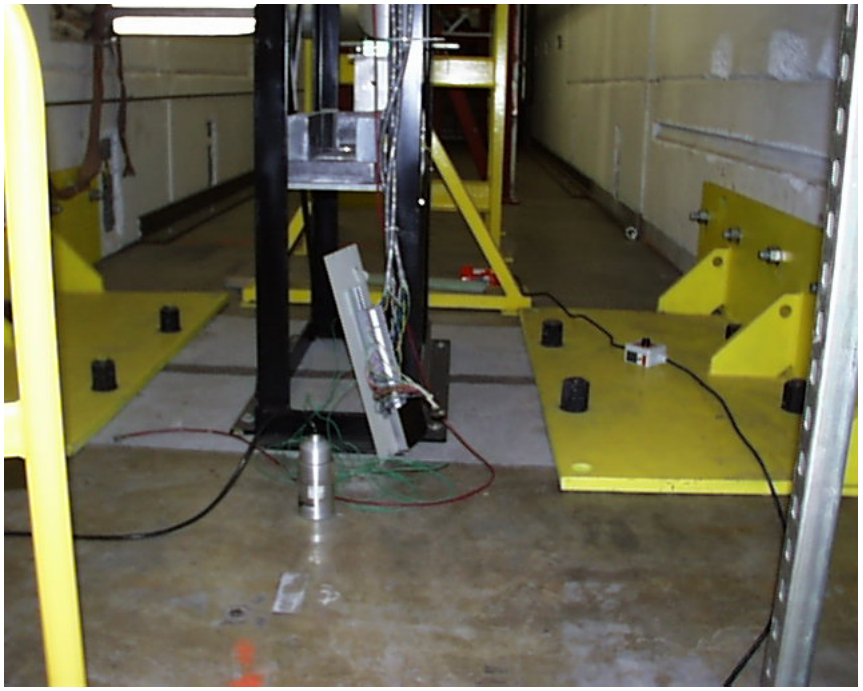
10 Mar 2011

Kirk Bertsche, Achim Weidemann

End Station A

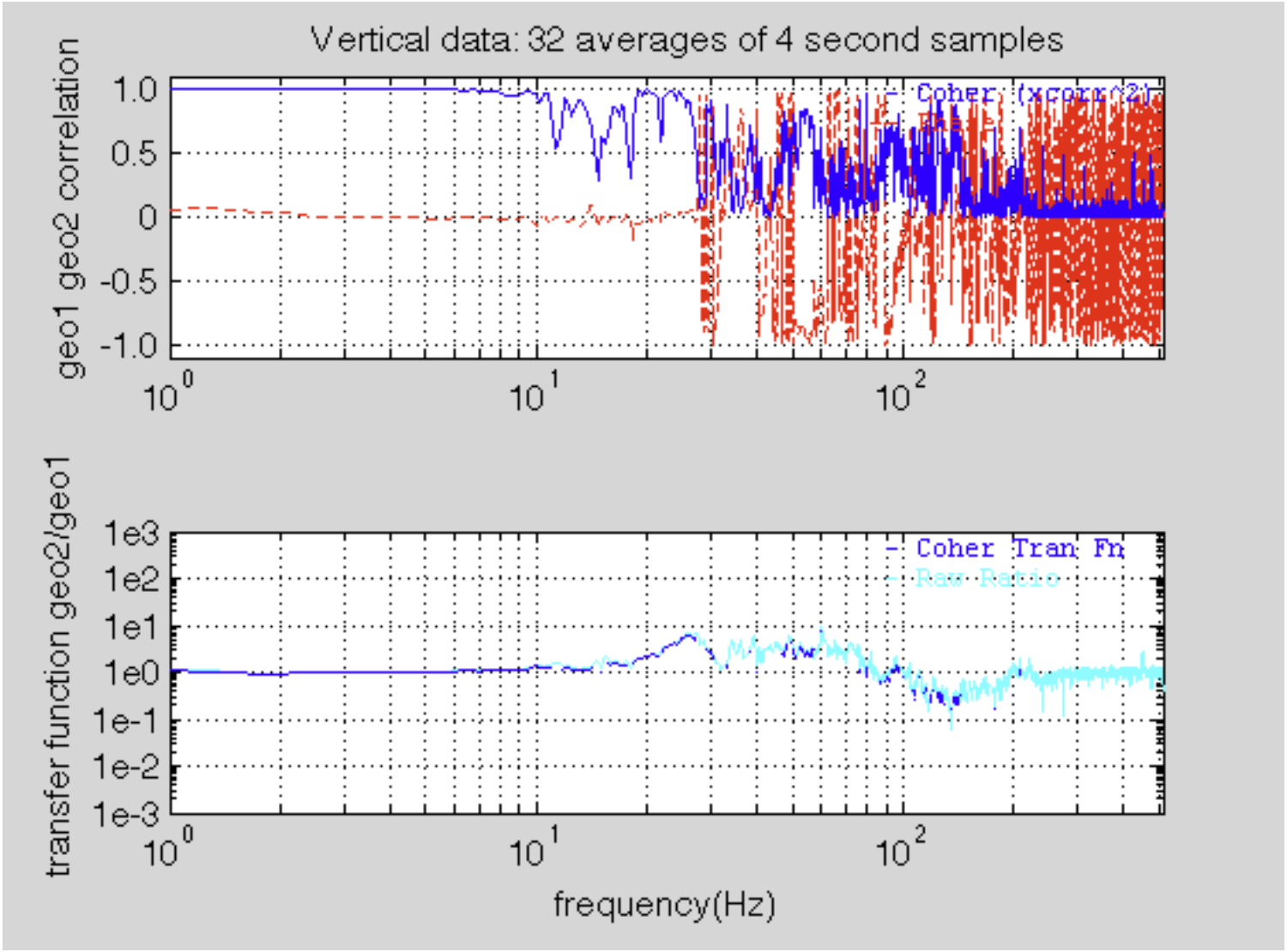
- “Tunnel” made of concrete blocks
- Measured floor and second roof block from end

End Station A



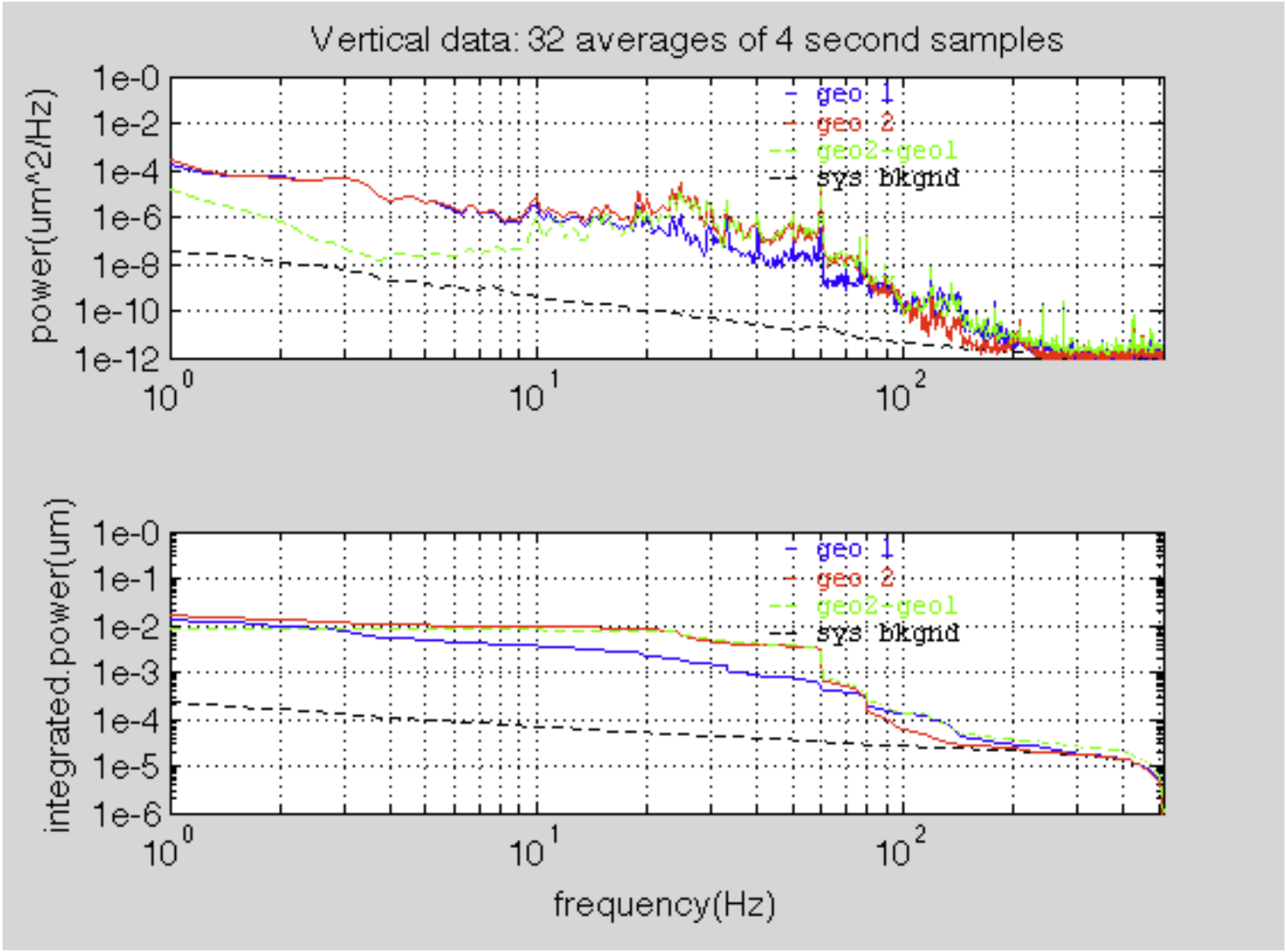
- Geophone positions on floor and second roof block from end
- Vibrator bolted to floor

Ambient Noise Power



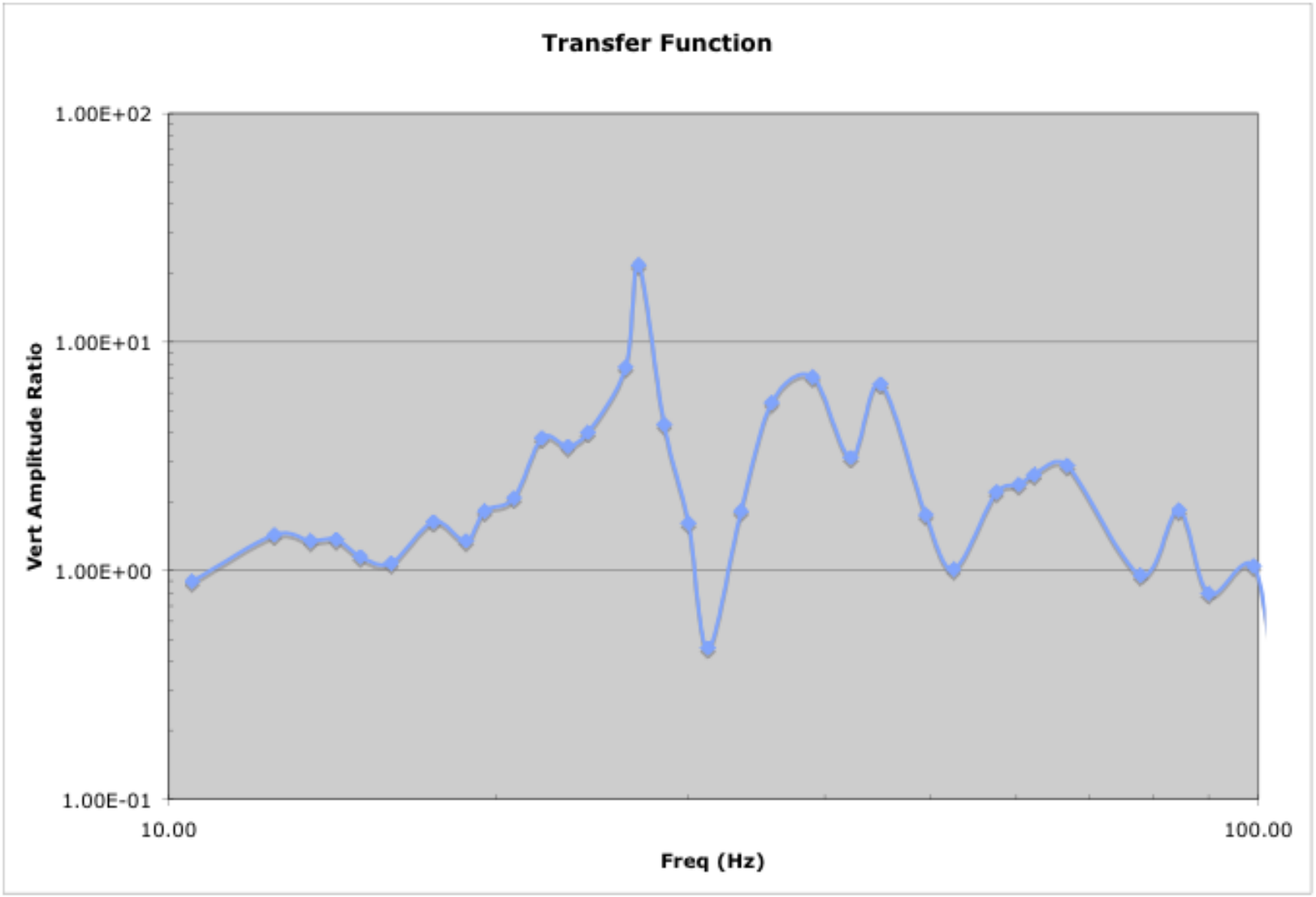
- March 2, 2011; geo1:" CH0 floor; "geo2:" CH1 top of second block

Ambient Noise Power



- March 2, 2011; geo1:" CH0 floor; "geo2:" CH1 top of second block

Transfer Function; roof/floor



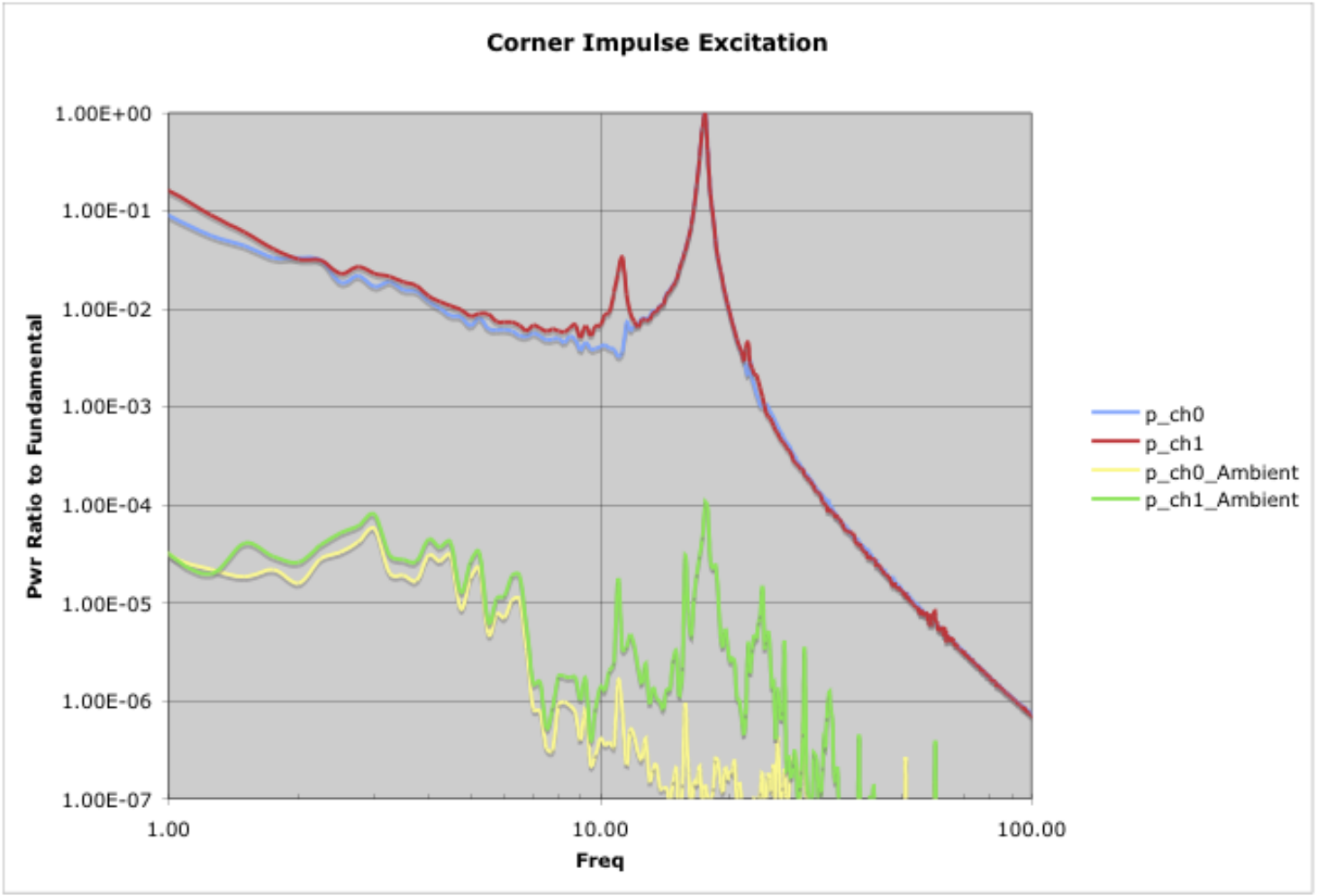
- Fundamental ~27 Hz; modes at 40-45 Hz involve floor or vertical columns
- March 2, 2011; vibrator-driven data; vibrator on floor

SLAC NATIONAL ACCELERATOR LABORATORY

Research Yard

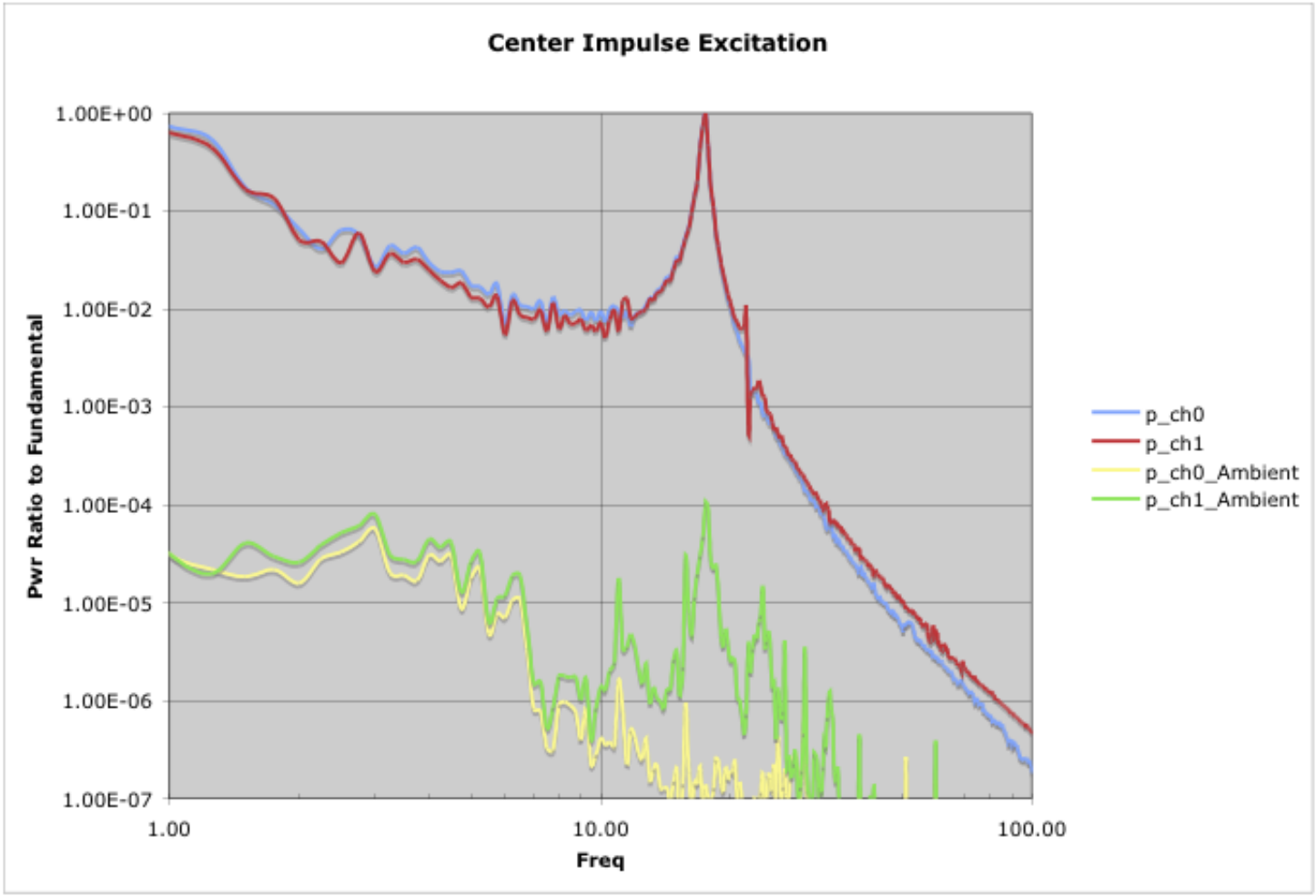
- Concrete slab supported by wood blocks above concrete pad

Impulse Response
excitation near corner of block



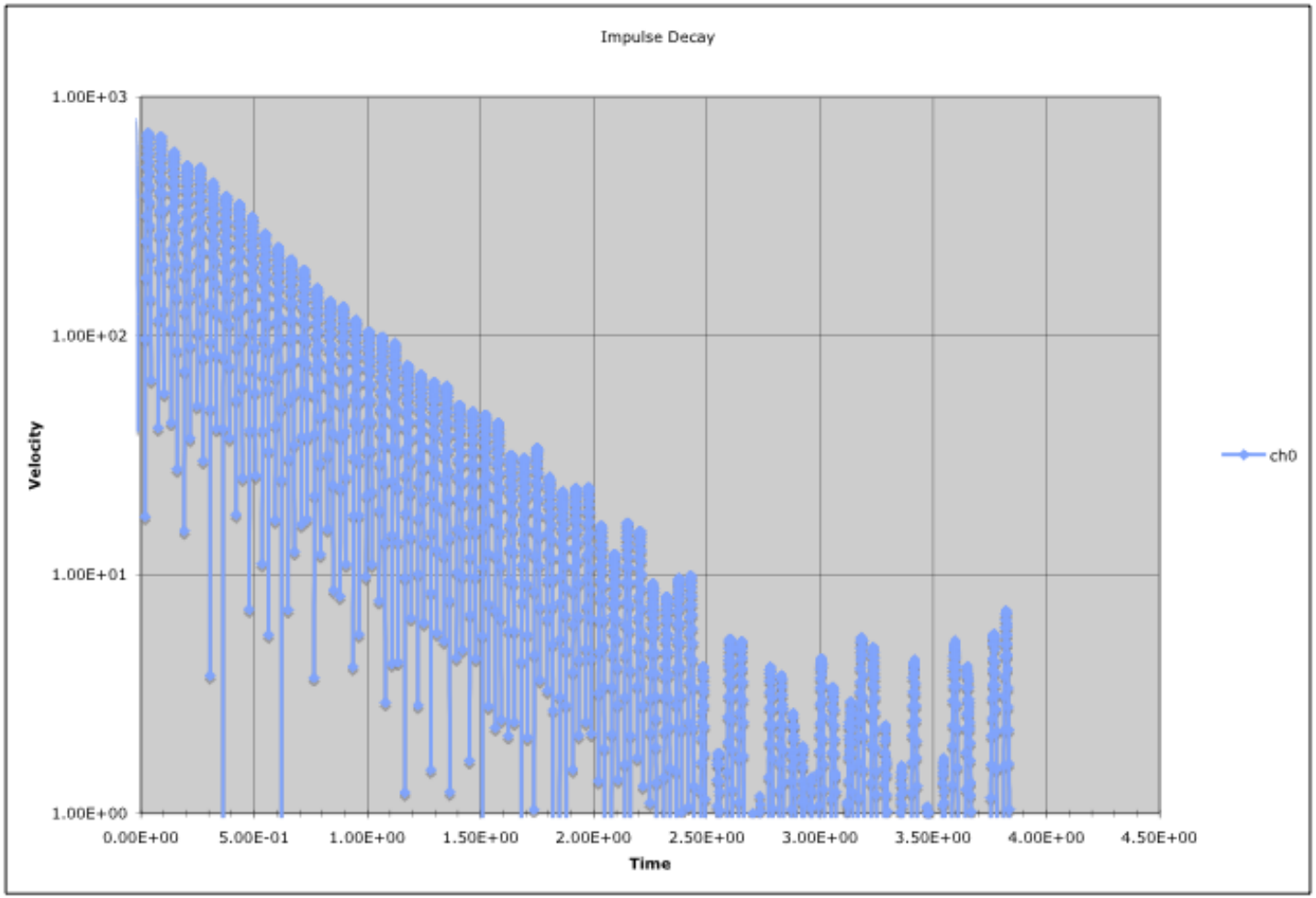
- Fundamental ~ 17 Hz
  - 11 Hz probably spurious

Impulse Response
excitation near center of block



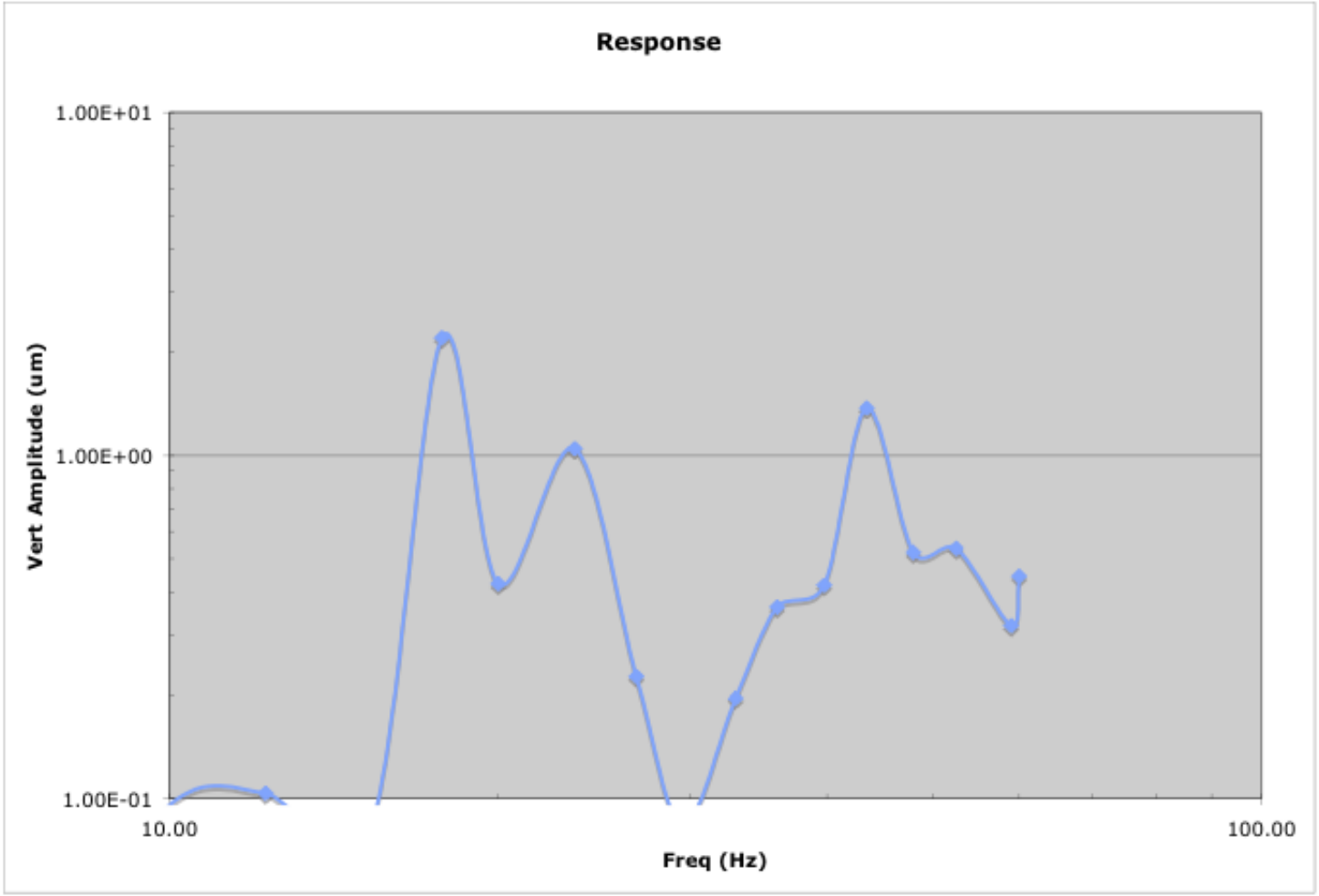
- Fundamental ~ 17 Hz
  - 21 Hz probably spurious

Decay Time of Response



- ~1.2 sec for 10x velocity reduction
  - ~3.6 sec "T_{60}"?

Driven Response
vibrator on wooden support



- Fundamental ~ 17 Hz
- Possible modes at ~ 24, 44 Hz?