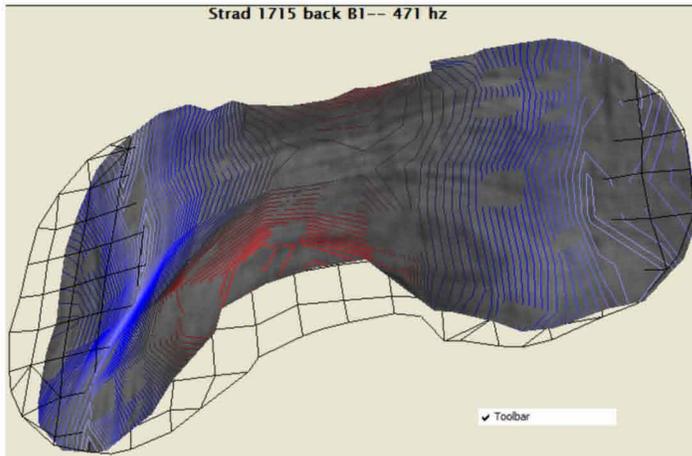


WINDOWS ONLY; PC or MAC - INTEL processor computers running WINDOWS.



The **Modal Animations** here are the core of this project. Many can be seen in the project videos, but best and most fun are the proprietary **POLYTEC** files (.svd), which open with the **POLYTEC ScanViewer** software, included on this dvd. The **ScanViewer** has good **HELP NOTES**, and it is worth spending some time to understand the controls.

The default motion settings can look pretty extreme!! Feel free to experiment with the settings; The files can not be altered or damaged.

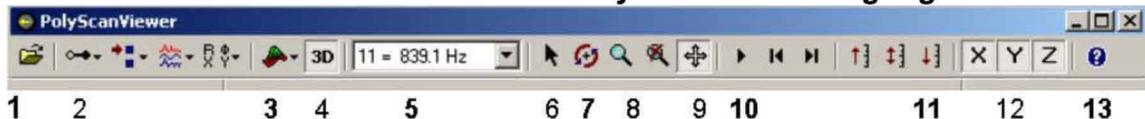
The **QUICK START** section below is an introduction to the most basic features.

- ⇒ **Download the Polytec Scan Viewer software** (Windows system only)
www.polytec.com/us/vibrometry/products/software/scanviewer
available from the Polytec Scan Viewer downloads page (freeware)
- ⇒ **Install the Polytec Software** on your computer --> **SEE NEXT PAGE**
- ⇒ **Download the Polytec modal .svd files-- included**
(eg Titian Rib.svd) Keep these on your computer.

⇒ **TO VIEW ANIMATIONS** This interface will NOT open the software or files directly. First, click to open the installed ScanViewer software, on your computer. All mode animation files are opened directly from the **FILE** within the ScanViewer.



Most controls are on the toolbar. Primary controls are highlighted below.



- 1. FILE menu.** Select and open the desired svd animation file. The first time you may need to locate the .SVD mode files, located in **GET FILES on this DVD.**
2. Default setting is FFT, needed to show animation.
- 3. Select your display type.** Try **SCAN POINTS** for low modes, for a nice restful image. Or switch to **SURFACE** for higher modes with complicated movement

Download and Install the Polytec Scan Viewer Software

The Polytec software included on the Strad3D DVD first printing is NOT compatible with Windows 7 or 8. Updated Polytec Scan Viewer Modal software may be downloaded free of charge.

To install the Polytec Scan Viewer software, please follow the instructions in the order they are listed below. If one of the steps has already been executed, it can be skipped.

1. Updating Windows

It is strongly recommended to install the latest service pack for Windows if it is not already installed on your system.

2. Installing the Microsoft .NET 4.0 (Full) Framework

Installing the required service packs for Windows is a precondition for installing the Microsoft .NET Framework.

To install the Microsoft .NET Framework:

Go to <http://www.microsoft.com/en-us/download/details.aspx?id=17718>

This will have Downloads, Installers and Technical Support.

3. Installing the Polytec Common Runtime

This step is only necessary, if you are installing the Polytec Scan Viewer software for the first time.

Please install the Polytec Common Runtime before installing the Polytec Scan Viewer software.

- a) Go to the [Polytec Scan Viewer downloads page](#) *
- b) Download either Polytec Common Runtime 32 bit for 32 bit operating systems or Polytec Common Runtime 64 bit for 64 bit operating systems.
- c) Follow the instructions given.

4. Installing the Polytec Scan Viewer software:

- a) Go to the [Polytec Scanviewer downloads page](#)
- b) If Download Polytec Scan Viewer 2.13
- c) The setup program will guide you through the installation procedure.

NOTE; Updated software may differ in details, display and controls from the DVD version described here in this QUICKSTART guide. Refer to the current Polytec documentation included with each version

* <http://www.polytec.com/us/products/vibration-sensors/vibrometer-software/scan-viewer-software/>.

ISOLINES are nice for frame-by-frame viewing or screen shots-and it shows not only movement but also areas of maximum bending as contour lines.

4. Default Set to 3D. Switch between 3D to 2D if desired.

5. **Select your mode frequency.** Select from the preset .svd modal files.

6. **Select Point;** Click icon, then click on the violin image to Highlight a single scan point. For example, highlight the sound-post position to track its motion!

7. **3d rotation control**  **move and rotate the image with the mouse.**

8. **ZOOM**   Click icon, then select an area to ZOOM: or REVERSE ZOOM.

9. **PAN**  click icon, then use mouse to pan image.

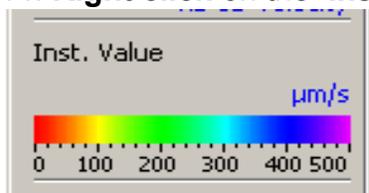
10. **Start the animation**    **Use the same button to stop it.**
  Advance or reverse the image one frame at a time (while stopped).

11. **Range of motion** The **two-headed arrow** is the default--   
Too extreme in general. **Down pointing arrow decreases the movement**—less is usually better! **Up pointing arrow** increases movement.

12. **Control Directions of motion** Selectively turns motion off or on.
Y = in-and-out, (called OUT OF PLANE movement). These motions are the most important to radiate sound. **X** = side-to-side, **Z** = up-and-down (both called IN PLANE movement, not as efficient sound radiators).

13. **HELP NOTES with info on all features..** (Section 3 is the most relevant).

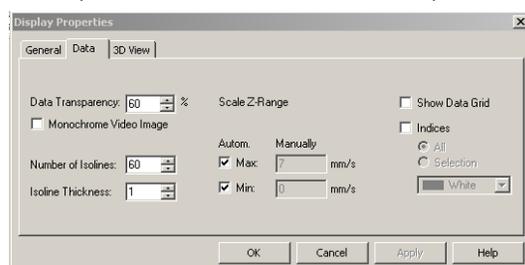
14. **Right click on the Inst. Value scale to Change the display colors.** Default is green/red. Try blue/red or Rainbow - Nice! ;^)



This scale indicates the amount of maximum movement, which is automatically reset to create uniform visual movement. This is easiest in general.

DISPLAY PROPERTIES; Right click on the main screen to open;

Data, General or 3d. In DATA, movement can be temporarily set manually for



comparisons. The software animates a rough B&W video image of the violin-- The transparency can be adjusted in the DATA box to adjust the intensity of the animation color. Try 50% to start.

Many other display and data controls can be adjusted in the dialog boxes. Refer to the Polytec HELP NOTES for details.

About the Modal Files

The Polytec files (.SVD) will display a assortment of modes preselected by the Polytec technician. This is not inclusive of all modes, and not all modes are necessarily strongly radiating.

Plowden Stiched or Titian STICHED files are linked scans of the back and top.

Titian RIB is from the g-side of the violin.

Titan bridge area detail was taken with a high density of scan points, to demonstrate the potential for high detail. On this scan only the impulse was generated by a speaker with high intensity frequency sweeps.

The **Willemotte** has a back scan only.

SOME COMMON QUESTIONS about Modal Animation >

Q. Is the violin really moving that way?

A. The Modal Animations are showing the real scanned movement of the specific violin, but **MUCH** slower and with **MUCH** more motion, for clear visibility. The color scale on the left indicates the actually maximum movement.

Q. What is a mode anyway?

A. When most objects receive a deforming impulse, they will flex and vibrate in a variety of patterns or **vibration modes** as they dissipate that energy. Each and every **mode** will vibrate at one specific pattern and speed, or **frequency**. Those mode frequencies and patterns are determined by the shape, strength, density and damping, and thus determine that object's resonance profile.

Q. What do the mode file names mean eg; 273hz, 545, 710, 1360 etc?

A. The MODES with animation files here are listed by HERTZ (vibration cycles per second), eg. 440 HZ = A. Refer to the **Musical Note Frequencies** document to correlate hertz and musical pitch.

Q. Can we tell which note on the violin is caused by any specific mode?

A. Any note played on a violin is made up of a whole series of frequencies ie; the FUNDAMENTAL frequency plus an entire series of the HARMONIC frequencies. Any one MODE resonates at a single frequency, but that frequency might be a component of a several different played notes. The **MODAL ANALYSIS** software

isolates one MODE at a time, while in actual use any number of modes may be active simultaneously.

Q. Do these files show all the modal activity, and are all these modes important?

A. The Polytec technician prepared a limited number of mode files, which showed noticeable **SURFACE MOTION**. Some viewed modes may not produce much sound, and some well radiating modes might not be displayed by the Polytec files. To know which modes on the test instruments radiate sound well, refer to the **Spectra Response** graphs or Dr. Bissinger's **ACOUSTIC SCANS**.

Q. Some of the images look crude and incomplete...

A. Some parts of the violin blocked three Scanning lasers clear access. The impulse-hammer holder also blocked access on the bass-bar side. Some scan focus points drifted a bit. This is cutting edge technology, and is still improving. Still, it is unprecedented, informative and pretty cool!

Next time (with a little more funding) **we can do much better!**