



“The workshop was energizing! I was inspired and motivated by the group’s interaction and the lectures. The time has come for science and lutherie to come together.”

“Workshops such as this are crucial in the evolution of modern instrument making.”

“Through tremendous preparation and hard work, Fan and Joe were extremely successful in taking difficult scientific ideas and presenting them in such a way that we could begin to appreciate their merit.”

—participants, 2002



Where & When

Oberlin College, July 7th-11th, 2003. Plan to arrive Sunday July 6th and depart Saturday July 12th. Oberlin is a classic American college town and home of the renowned Oberlin Conservatory of Music. Thirty miles west of Cleveland, Ohio, it is a thirty minute drive from Cleveland International Airport. Shuttle service to and from the airport is available.

Tuition

\$700 general admission, \$650 for current members of the Catgut Acoustical Society or the Violin Society of America, and \$600 for current members of both.

Accommodation

Most participants stay in student housing a short walk from classes. Cost for session: \$155 single, \$135 double. Nearby hotels and motels are also available. Participants share family-style home cooked dinners every night (\$5 per meal). Breakfast and lunch on your own, or at nearby restaurants

Enrollment

Space in the workshop is limited to about twenty participants and fills quickly. A \$200 deposit by April 1st secures a reservation. The balance is due by June 1st. If you are interested in attending, please contact Fan Tao for further information. Please DO NOT send payment until you have contacted Fan Tao.

Contact Info

Fan Tao
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595 Smith Street
Farmingdale, NY 11735
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631-439-3270

Payment

After confirmation from Fan Tao, send a check (payable to Oberlin College, non-US residents must use a World Money Order) along with contact information (name, address, phone number, email) to:

Acoustics Workshop
Office of Outreach Programs
Conservatory of Music
39 West College Street
Oberlin, OH 44074-1588



Explore the World of Violin Acoustics...

The VSA–Oberlin Acoustics Workshop is a five-day intensive workshop for violinmakers. Talks, demonstrations, and hands-on experimentation provide an introduction to the field, an overview of current research, and numerous strategies for incorporating scientific method into workshop practice so as to produce better-sounding instruments.

Co-directors Fan Tao and Joseph Curtin are joined by some of the foremost researchers in the field, including George Bissinger, Norman Pickering, Oliver Rodgers, Robert Schumacher, and James Woodhouse.

...this Summer at Oberlin College!

“My understanding of the principles of violin acoustics took a quantum leap! I am eager to go back to my workshop to apply what I have learned.”

—participant, 2002

Computer as a Workshop Tool

A personal computer with a soundcard can be used for everything from plate and bridge tuning to measuring the frequency response of a finished instrument. Learn about the hardware and software needed to set up an inexpensive acoustical lab in your workshop.

Plate Tuning

Tap-tones can be easily monitored and, to some extent, controlled during graduation. Still, there has been much debate about the meaning and validity of plate tuning. A case will be made for its use in arriving at intelligent graduations and in tracking changes in plate stiffness over time.

Bridge Tuning

The bridge tends to filter out frequencies above its own first resonance, thus acting as a kind of treble control. Learn how to tune the bridge in order to increase or decrease the brightness of an instrument.

F-holes and Air Resonances

The area of the f-holes and the volume of the enclosed air largely determine the characteristics of an instrument's lowest radiating resonance. Find out how to adjust this 'Helmholtz' resonance in order to optimize an instrument's low frequency response.

$S = W \times H^3$

Learn the 'E = MC²' of violinmaking and its importance to bassbar design, graduation—indeed to all aspects of an instrument's structure.

Choosing Wood

Relatively simple and inexpensive ways to measure the acoustical properties of wood are now available. Find out about the advantages and pitfalls to using them, and explore the relationship between wood properties and the sound of the finished instrument.

Modal Analysis

Modal analysis allows engineers to optimize the performance of everything from race cars to spacecraft. Discover how such researchers as Martin Schleske and George Bissinger use modal analysis to understand the inner workings of the violin—and how a simple modal analysis can be done with minimal equipment in your workshop.

Psycho-Acoustics

A successful instrument is to a large extent one which 'co-operates' with the hearing characteristics of both player and audience. A basic knowledge of psycho-acoustics is crucial to understanding why some instruments are more successful than others.

Acoustical Research

An overview of the tools, methods, and discoveries of researchers from Duennwald to Weinreich to Schleske. A bibliography of books and articles written in non-mathematical fashion will be provided.



Faculty

Joseph Curtin, co-director, is a violinmaker who has worked with researchers such as Charles Besnainou, Martin Schleske, and Gabriel Weinreich to better understand both violin acoustics and the possibilities for the instrument's further evolution by way of new designs and materials. Curtin is a Trustee and Contributing Editor to the Catgut Acoustical Society and a regular contributor to Strad magazine.

Fan Tao, co-director, is Director of Research and Development at J. D'Addario & Company, where he works on bowed and guitar strings. He also collaborates with Norman Pickering on violin acoustics research. Tao is an accomplished violinist and violist and an avid chamber music player. He holds electrical engineering degrees from Caltech and Princeton University and is a Trustee of the Catgut Acoustical Society and a Director of the Violin Society of America.

George Bissinger is Professor of Physics at East Carolina University and Director of the Acoustics Laboratory. His research concentrated on normal mode vibration and radiation analysis of quality rated violins, creating solid models with reliable material properties from CT scans, and investigating cavity mode radiation and corpus-cavity interactions.

Norman Pickering was educated in electrical engineering at the Newark College of Engineering, as a professional musician at Juilliard, and in acoustics at Columbia University. Beginning as a performer in symphony orchestras, he moved to sound recording and the development of recording and playback equipment. This led to musical instrument research and development—and the construction of over fifty instruments.

Oliver Rodgers is a mechanical engineer and violin player who upon retirement became fascinated with the intricacies of making and technically understanding violins. He has been a Catgut Acoustical Society Trustee for many years and is a frequent contributor to the CAS Journal.

Robert Schumacher is Professor of Physics Emeritus at Carnegie Mellon University. He has concentrated mainly on the oscillations of musical instruments with emphasis on string instruments. In recent years, he has investigated the frictional properties of rosin and its role in the bowed string.

Jim Woodhouse has worked on violin acoustics since his doctoral project on the subject in the 1970s, his interest sparked by his experience as an amateur instrument maker. A professor at the Engineering Department of Cambridge University, his most recent paper, "Body Vibration of the Violin—What Can a Maker Expect to Control?" appeared in the May 2002 issue of the Catgut Acoustical Society Journal.

Faculty is subject to change.

The VSA—Oberlin Acoustics Workshop is sponsored by the Catgut Acoustical Society, Oberlin College, and the Violin Society of America.

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