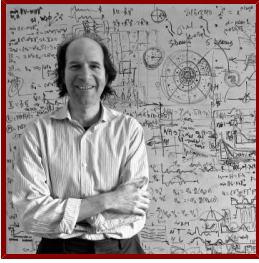


# Stanford

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## Jonathan Abel

Adjunct Professor  
Music

### Bio

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#### BIO

Jonathan S. Abel is a Consulting Professor at the Center for Computer Research in Music and Acoustics (CCRMA) in the Music Department at Stanford University, working in music and audio applications of signal and array processing, parameter estimation and acoustics. He is also a co-founder of Seismic Innovations, LLC, and Seismic Services, LLC, companies specializing in microseismic signal processing. Abel was a co-founder and Chief Technology Officer of the GRAMMY Award winning Universal Audio, Inc. He was previously a researcher at NASA/Ames Research Center, Chief Scientist of Crystal River Engineering, Inc., and a Lecturer in the Department of Electrical Engineering at Yale University. As an industry consultant, Abel has worked with Apple, Dolby, FDNY, LSI Logic, L3 Technologies, LR Baggs, Native Instruments, SAIC, Sennheiser, Sigma Cubed, Triple Ring, and the U.S. NRL on projects in professional audio, GPS, fire department siting and deployment, medical imaging, room acoustics measurement, audio effects processing, passive sonar, and microseismic signal processing. He holds Ph.D. and M.S. degrees from Stanford University, and an S.B. from MIT, all in electrical engineering. Abel is a Fellow of the Audio Engineering Society for contributions to audio effects processing.

#### ACADEMIC APPOINTMENTS

- Adjunct Professor, Music

### Teaching

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#### COURSES

##### 2023-24

- Signal Processing Techniques for Digital Audio Effects Group Study: MUSIC 424L (Win)

#### STANFORD ADVISEES

##### Doctoral Dissertation Reader (NonAC)

Nima Farzaneh

### Publications

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#### PUBLICATIONS

- **Electric-to-acoustic pickup processing for string instruments: An experimental study of the guitar with a hexaphonic pickup.** *The Journal of the Acoustical Society of America*  
Rau, M., Abel, J. S., James, D., Smith, J. O.  
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- **Grouped Feedback Delay Networks for Modeling of Coupled Spaces** *JOURNAL OF THE AUDIO ENGINEERING SOCIETY*

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- Das, O., Abel, J. S.  
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- **Electric-to-acoustic pickup processing for string instruments: An experimental study of the guitar with a hexaphonic pickup** *JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA*  
Rau, M., Abel, J. S., James, D., Smith, J. O.  
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  - **CONFORMAL MAPS FOR THE DISCRETIZATION OF ANALOG FILTERS NEAR THE NYQUIST LIMIT**  
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  - **Dispersive Delay and Comb Filters Using a Modal Structure** *IEEE SIGNAL PROCESSING LETTERS*  
Abel, J. S., Canfield-Dafilou, E. K.  
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  - **A Method for Studying Interactions between Music Performance and Rooms with Real-Time Virtual Acoustics**  
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  - **ON THE BEHAVIOR OF DELAY NETWORK REVERBERATOR MODES**  
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  - **Live auralization of Cappella Romana at the Bing Concert Hall, Stanford University** *AURAL ARCHITECTURE IN BYZANTIUM: MUSIC, ACOUSTICS, AND RITUAL*  
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  - **Icons of Sound: Auralizing the Lost Voice of Hagia Sophia** *SPECULUM-A JOURNAL OF MEDIEVAL STUDIES*  
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  - **Modal Processor Effects Inspired by Hammond Tonewheel Organs** *APPLIED SCIENCES-BASEL*  
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  - **SIGNAL DECORRELATION USING PERCEPTUALLY INFORMED ALLPASS FILTERS**  
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BRNO UNIV TECHNOLOGY, FAC ELECTRICAL ENG & COMMUNICATION.2016: 225-31
  - **More Than Fifty Years of Artificial Reverberation**  
Valimaki, V., Parker, J. D., Savioja, L., Smith, J. O., Abel, J. S.  
edited by Goetze, S., Spriet, A.  
AUDIO ENGINEERING SOC INC.2016
  - **DO YOU HAVE TO KEEP THE GOVERNMENT'S SECRETS? RETROACTIVELY CLASSIFIED DOCUMENTS, THE FIRST AMENDMENT, AND THE POWER TO MAKE SECRETS OUT OF THE PUBLIC RECORD** *UNIVERSITY OF PENNSYLVANIA LAW REVIEW*  
Abel, J.  
2015; 163 (4): 1037-1097
  - **WAVE DIGITAL FILTER ADAPTORS FOR ARBITRARY TOPOLOGIES AND MULTIPOINT LINEAR ELEMENTS**  
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- **A GENERAL AND EXPLICIT FORMULATION FOR WAVE DIGITAL FILTERS WITH MULTIPLE/MULTIPOINT NONLINEARITIES AND COMPLICATED TOPOLOGIES**  
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- **RESOLVING WAVE DIGITAL FILTERS WITH MULTIPLE/MULTIPOINT NONLINEARITIES**  
Werner, K., Nangia, V., Smith, J. O., Abel, J. S.  
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- **A bank of beamformers implementing a constant-amplitude panning law.** *journal of the Acoustical Society of America*  
Hur, Y., Abel, J. S., Park, Y., Youn, D. H.  
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- **Numerical Synthesis of an Optimal Low-Sidelobe Beam Pattern for a Microphone Array** *IEEE SIGNAL PROCESSING LETTERS*  
Hur, Y., Park, Y., Abel, J. S., Youn, D. H.  
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- **The Switched Convolution Reverberator** *JOURNAL OF THE AUDIO ENGINEERING SOCIETY*  
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2011
- **Parametric Spring Reverberation Effect** *JOURNAL OF THE AUDIO ENGINEERING SOCIETY*  
Valimaki, V., Parker, J., Abel, J. S.  
2010; 58 (7-8): 547-562
- **Efficient Antialiasing Oscillator Algorithms Using Low-Order Fractional Delay Filters** *IEEE TRANSACTIONS ON AUDIO SPEECH AND LANGUAGE PROCESSING*  
Nam, J., Valimaki, V., Abel, J. S., Smith, J. O.  
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- **Automated Physical Modeling of Nonlinear Audio Circuits For Real-Time Audio Effects-Part I: Theoretical Development** *IEEE TRANSACTIONS ON AUDIO SPEECH AND LANGUAGE PROCESSING*  
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- **Estimating Waveguide Model Elements from Acoustic Tube Measurements** *ACTA ACUSTICA UNITED WITH ACUSTICA*  
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- **A simple, accurate wall loss filter for acoustic tubes** *6th International Conference on Digital Audio Effects (DAFX 03)*  
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