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Acoustical Phenomena of Indigenous Instruments: Intercultural Music Immersion Through the Lens of Physics

Presented by

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Mentored by

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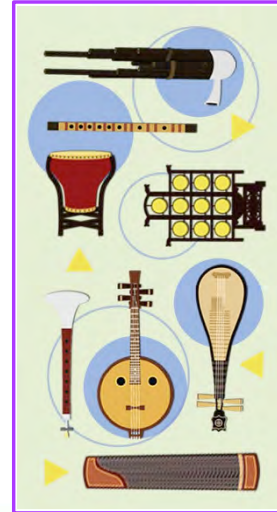


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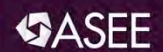
Introduction

- Traditional instruments represent rich cultural history
 - **Lack of documentation**
- Using acoustics to bridge the gap for contemporary composers
- Preserving historical significance



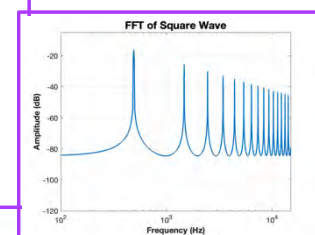
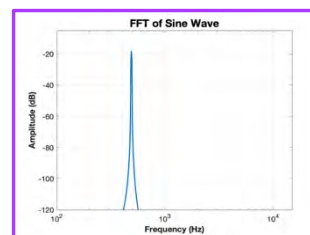
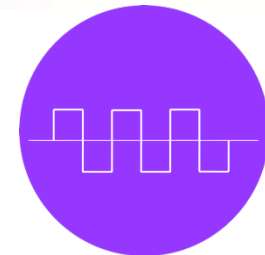
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Methods

- *Fast Fourier Transform* – convert sound wave into constituent frequencies
- *Equal-Loudness curve** – visualize how volume changes over pitch
- Compare with well-documented instruments



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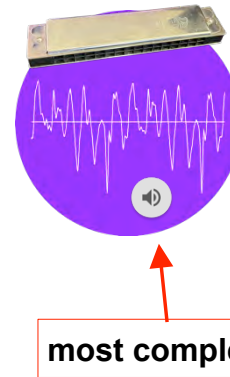
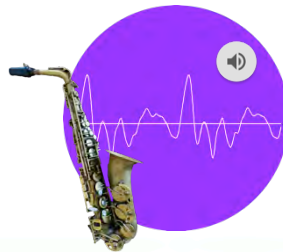
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Contemporary Instruments



more complex

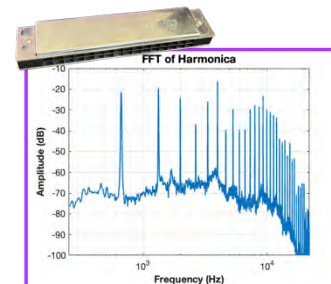
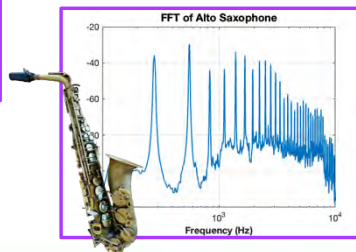
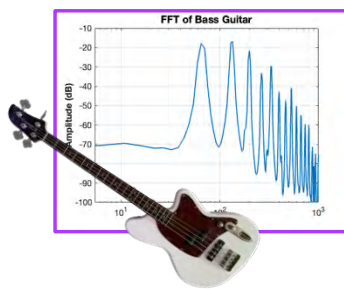


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Contemporary Instruments

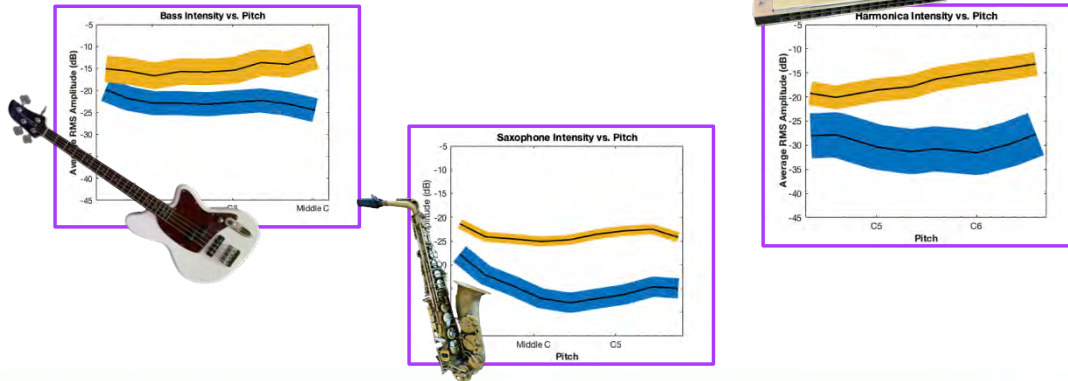


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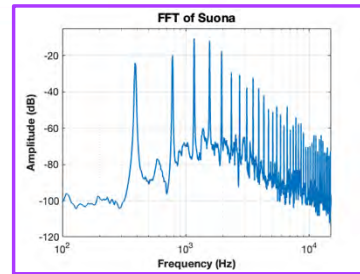
Contemporary Instruments



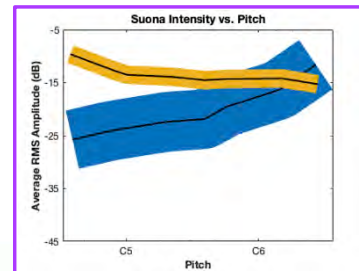
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Traditional Chinese Suona



- Traditional Chinese wind instrument
- Reedy sound similar to western oboe
- Unique place in contemporary orchestra



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Conclusions

- Simple, repeatable method to begin the documentation process on traditional instruments
- Will allow contemporary composers to find live sounds never before imagined
- Working with Prof. Anthony Paul De Ritis → contracted to write a book on Chinese traditional instruments for Western composers
 - Plans to study many more instruments

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