# MUS 6: Electronic Music

## Section Lecture 1

*Wednesday, October 7, 2020*

# Lecture Outline

1. **Announcements**

2. **General Information**

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5. **Introductions**

6. **Homework 1 (Ableton Live Basics)**

# Announcements

- **Homework Assignment #1 is DUE by Friday, [Oct 16](#)**

- We'll go over how to do the assignment during lecture today and next week. If you need more guidance, please email me with questions. You can also set up a time to meet with me individually over Zoom.

# General Information: My office hours

- My office hours are currently set by appointment. The advantage of this setup is that it allows me to meet individually with each student who needs help at a time that works for both of us.

- If several students need help on a particular assignment, I will consider holding special office hours

# General Information: Section website

[chadmckell.com/mus6](chadmckell.com/mus6)

- All of the slides for my section lectures (plus other relevant course material) will be posted on the section website linked above

# General Information: Zoom

- All section lectures and office hours will be held over Zoom

- If you can't hear me or the audio quality is poor, please interrupt me so that I can resolve the issue

- Unless there are objections, I will record each section lecture and post a link to the recording on Canvas. If any of you prefer not to be recorded, please email me your concerns so that we can come up with a solution.

# Course Overview: What is this course?

- This course provides a general overview of the **history** and **techniques** of electronic music production

- Topics include MIDI, sampling, audio effects, and automation

- The main composition tool for the course is **Ableton Live**

- In the section lectures, we will discuss the **listening** exercises and review strategies for completing the **homework** assignments

- No previous musical background is required

# **Summary of Main Lecture 1: <u>Thurs Oct 1</u>**

- Electronic music is music created using machines powered by electricity

  - Examples: analog synthesizers, theremins, electric guitars, and computers
  - Computer music is a sub-genre of electronic music

- The machines used in electronic music have superhuman musical abilities

  - They can play perfectly-timed music (i.e. music that exactly follows a time signature)
  - They can play many notes of music at an extremely fast rate

- What are the advantages of digital electronic music technology over analog electronic music technology, and vice-versa?

  - Digital technology is less costly, takes up less space, is more durable, and is more flexible
  - Some people claim that analog technology sounds better

# Summary of Main Lecture 2: <u>Tues Oct 6</u>

- You can make a simple drum pattern in Ableton by following the guide "260 Drum Machine Patterns" by Rene-Pierre Bardet. A link to this document is on OneNote. (Note: you don't need to use this guide if you don't want to).

- To make a drum pattern for Homework 1, you'll need to know how to create MIDI data

# Introductions

# Introductions: Who am I?

**Chad McKell**

- <u>Major</u>: 2nd-year Ph.D. student in Computer Music (Sep 2019-present)
- <u>Hometown</u>: L.A. area (near Six Flags Magic Mountain)
- <u>Research</u>: physics-based sound synthesis (https://chadmckell.com/research)
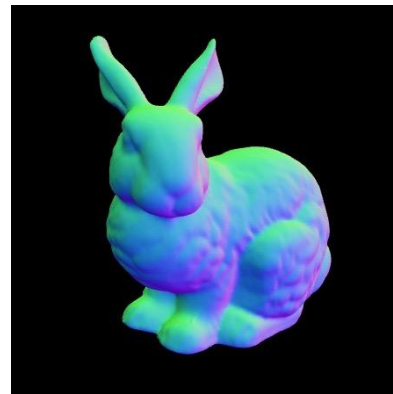
# Introductions: My academic background

B.S., Brigham Young University, **Biophysics** (2002-2009)
- *Courses*: physics, mathematics, biology, chemistry
- *Research*: atomic force microscopy

M.S., Wake Forest University, **Physics** (2009-2015)
- *Courses*: computational physics, classical/quantum mechanics
- *Research*: optical trapping, fluid dynamics (JOSA, ICMC)

M.S., University of Edinburgh, **Acoustics and Music Technology** (2016-2017)
- *Courses*: acoustics, digital signal processing, complex analysis
- *Research*: physics-based sound synthesis (Razer Nari Ultimate)
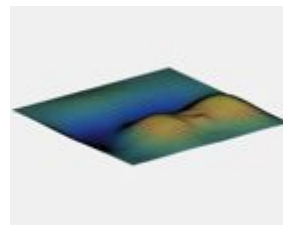
# Introductions: My recent work experience

**Lofelt**, Freelance Software Developer (Apr-Aug 2017)
- _Topics_: elastic solid dynamics, digital filter design (MATLAB)
- _Projects_: Razer Nari Ultimate headsets



**Moog Music**, Freelance Software Developer (May 2018)
- _Topics_: modulated delays, digital filter design (C++)
- _Projects_: synthesizer effects



**Applied Research in Acoustics**, R&D Scientist (Jul 2018 - Jul 2019)
- _Topics_: acoustics, digital signal processing (MATLAB)
- _Projects_: naval sonar systems

# Introductions: My Ableton-related tech project

- As part of my research, I have studied the synthesis technology found in the Ableton instrument "Collision" (see screenshot below)

- With Collision, you can construct your own unique musical sounds using basic physical building blocks like strings, beams, and plates
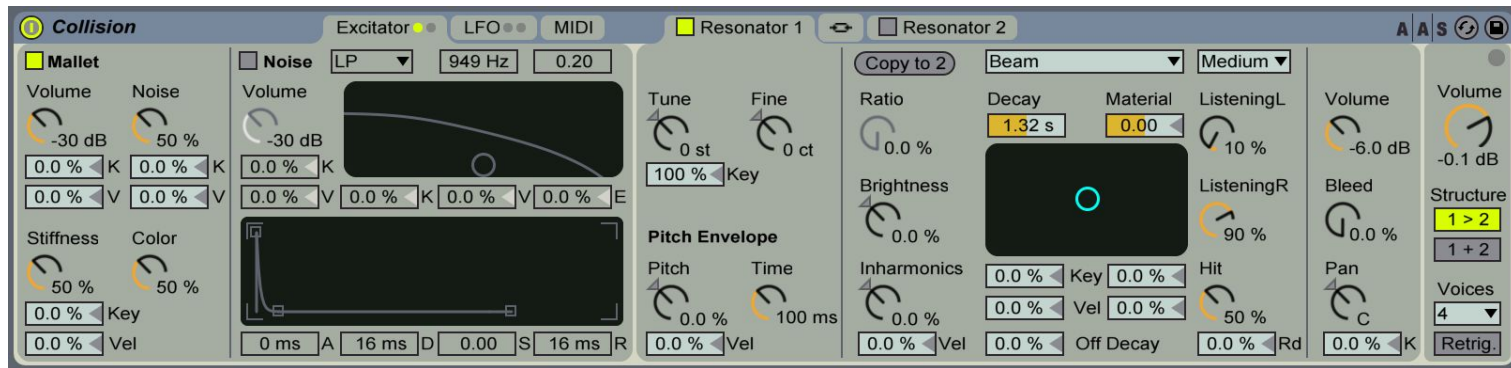
# Introductions: My Ableton-related tech project

- The synthesis technology found in Collision is called modal synthesis

- For those who are interested and have a background in mathematics, I've included an explanation of modal synthesis on the section website (see link in the Lecture 1 materials). **Please note that this reading is <u>optional</u>.**

# Introductions: Who are you?

I'd love to hear more about each of you. Please take about 1 minute to introduce yourself. Below are some questions you could answer:

- What's your major?
- Where are you from?
- What kind of music do you like to listen to?
- What kind of music would you like to make?
- What aspect of electronic music interests you the most (production, technology, etc)?
- What do you hope to get out of this course?
- What other music courses have you taken that you enjoyed?
- What other music courses interest you?
- What are your long-term goals with music?
- Is there anything else you would like to say?

# Homework 1 (Ableton Live Basics)

# Homework 1: Lecture schedule

- **Today:**
  - Drum patterns (review)
  - MIDI data
  - Audio samples

- **Next Wednesday (October 14):**
  - Favorites bar
  - Automation
  - Canvas submission guidelines (assignment + discussion)

# Homework 1: Drum patterns

- For my drum pattern, I used alternating waltz patterns: 1 + 2 + 1 + 2 + etc

- When you program each beat pattern in Ableton, resize the clip view so that you see the same number of beats per measure as shown in "260 Drum Machine Patterns" (assuming you decide to use that guide)

- After you program your drum pattern, try swapping in and out different drum kits until you find one that fits your song best

# Homework 1: MIDI Data

- You may create your own MIDI data or download it from somewhere online

- If you're not sure what to do, here's one option you could explore:

  - Create a video game track. First, go to this site to download a free MIDI file of video game music: https://ichigos.com/

  - Make sure that the style of the video game music matches your drum pattern. (Note: The waltz is a common video game drum pattern, so you could program a waltz for your drum pattern to make things easier for yourself).

  - Drag and drop the MIDI file on to a MIDI track in Ableton

  - Choose an instrument for your MIDI track

  - The tempo of your drum pattern should automatically adjust itself to match your MIDI file

# Homework 1: Audio Samples

- As discussed in the main lecture, you may use any of the samples provided under "Samples" in the Browser View of Ableton (Note: you may need to download your "packs" in order to see these samples)

- You may also use samples you find elsewhere. For example, the website **freesound.org** has many samples you could use.

# Questions