

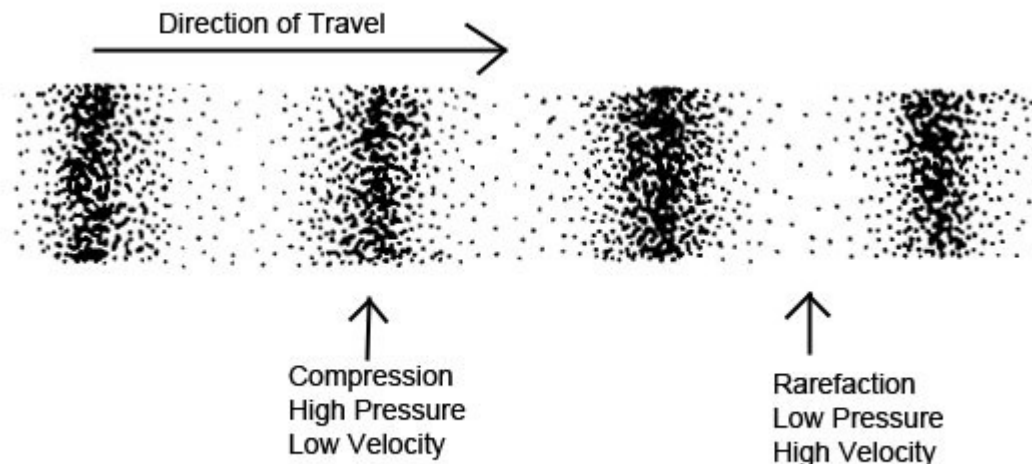
# Audio Frequencies

A sound represents a pattern of compression waves in the air.

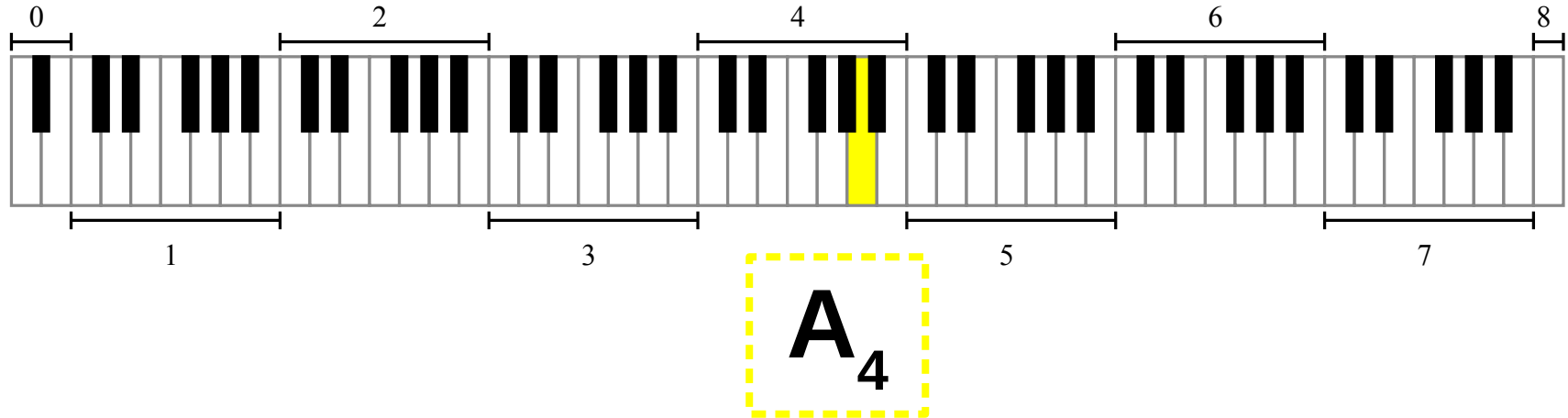
A **tone** is a sound with a consistent number of compression cycles over time.

We measure tones in **Hertz** (Hz), the number of cycles per second.

The human ear can generally detect sounds in the range of  
**20 Hz to 20,000 Hz.**



# Musical Notes



$$T = 440 \text{ Hz}$$

For any  $n \in \mathbb{Z}$  where  $T$  is a reference tone frequency:

$$T \cdot 2^{n/12}$$

generates all the frequencies for notes in the chromatic scale of Western music.

The general character of a tone repeats every 12 notes, called an **octave**.

# Project

What's  
Your Sine

# Driving Question

**How can we as electronic musicians define a new audio effect algorithm?**

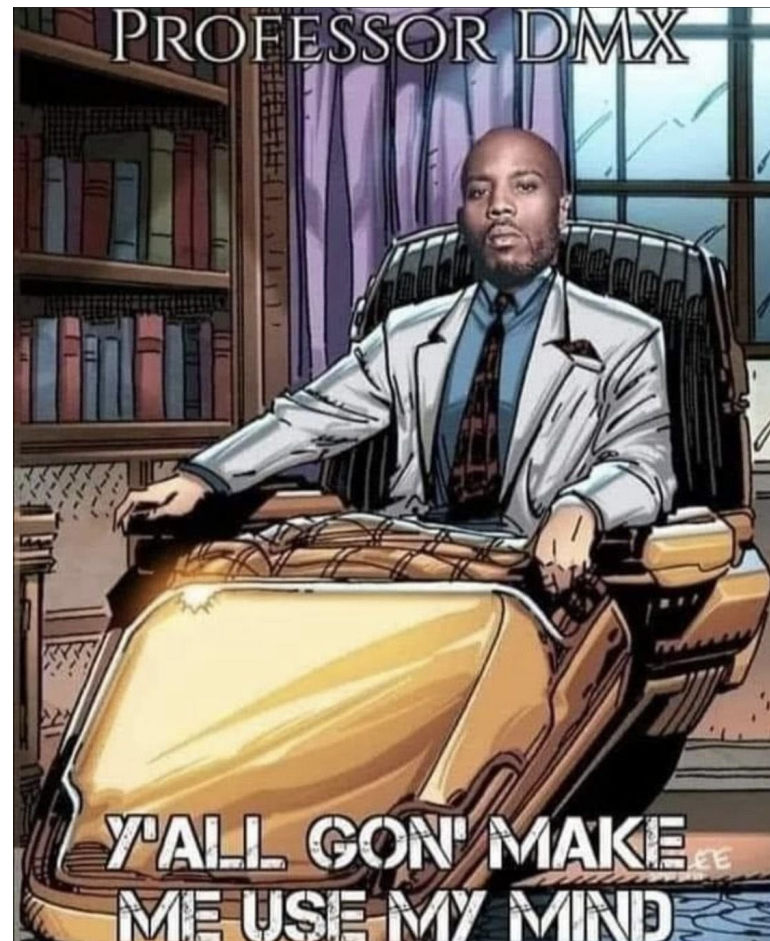
# **Deliverables**

- **effect name**
- **function graphs**
- **example tone and chord**
- **powerpoint slides**
- **presentation**

# **Non Negotiables**

- **Input is an audio frequency.**
- **Algorithm defined with sum of transformations.**
- **Results are in human auditory spectrum.**
- **Effect must have original elements.**
- **Need to work with a partner.**

# Questions?



# WHAT'S YOUR SINE CHARRETTE PROTOCOL

|                                        |                                                                                                                                                                                                                                                                                              |                  |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>PRESENTERS</b>                      | <p><b>Presentation:</b><br/> Presenters explain and demonstrate their effect<br/> Presenter asks a specific question for feedback:<br/> “What is unclear about our explanation?”</p> <p><b>Thought Partners listen.</b></p>                                                                  | 2 minutes        |
| <b>THOUGHT PARTNERS</b>                | <p>Partners give suggestions providing helpful, specific, and kind feedback:</p> <p><b>“I Like...”:</b> Audience shares what they liked about the effect<br/> <b>“I Wonder...”:</b> Audience shares concerns about how to explain how the effect works.</p> <p><b>Presenters listen.</b></p> | 2 minutes        |
| <b>PRESENTERS AND THOUGHT PARTNERS</b> | <p><b>Presenters and Thought Partners</b> have an <b>open dialog</b> about the suggestions and feedback.</p>                                                                                                                                                                                 | 2 minutes        |
| <b>TOTAL TIME</b>                      |                                                                                                                                                                                                                                                                                              | <b>6 minutes</b> |