

WEEK 9: AUDIO PRODUCTION

DIGITAL MEDIA E-5

EXPLORING DIGITAL MEDIA

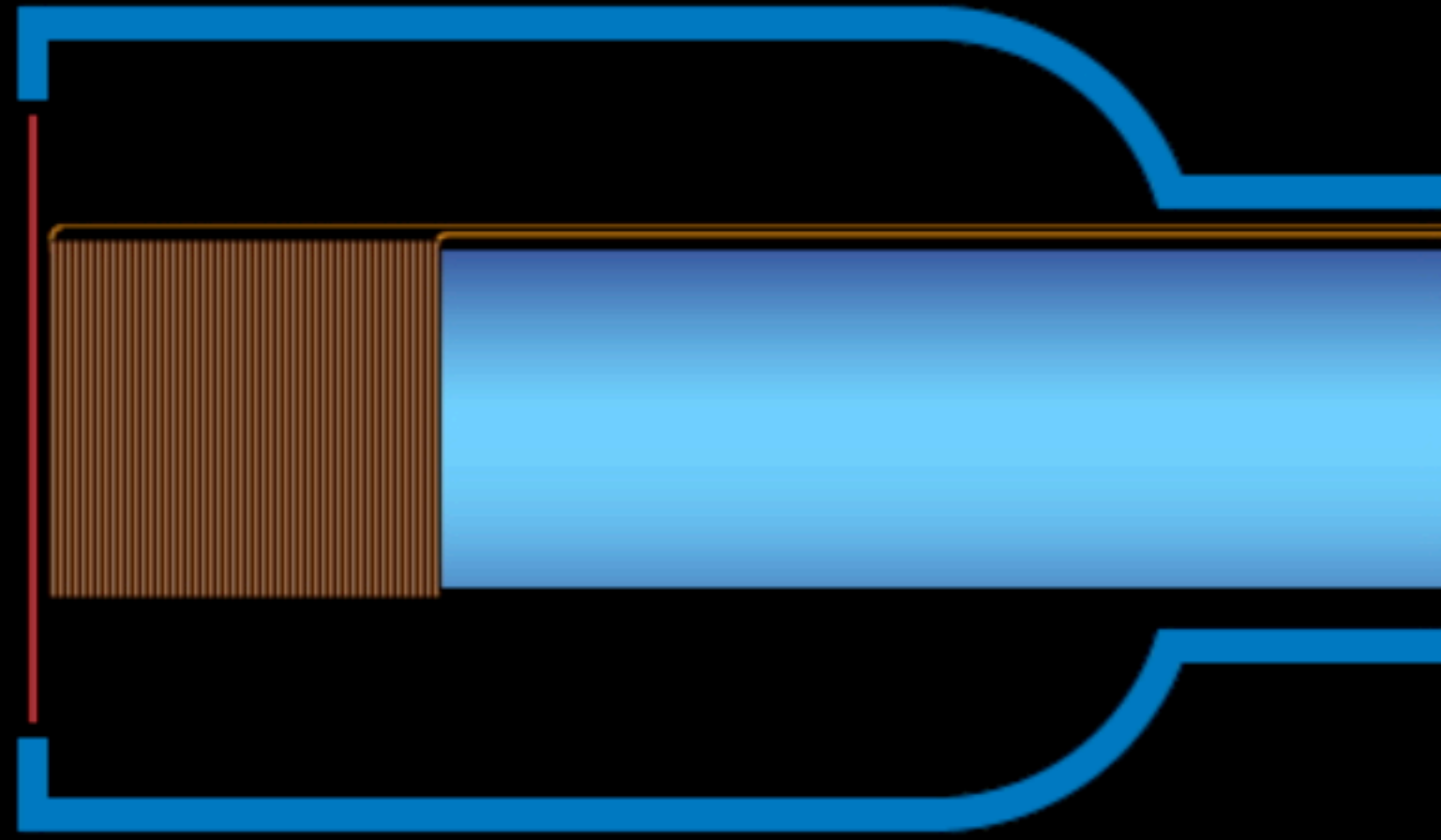
DAN COFFEY
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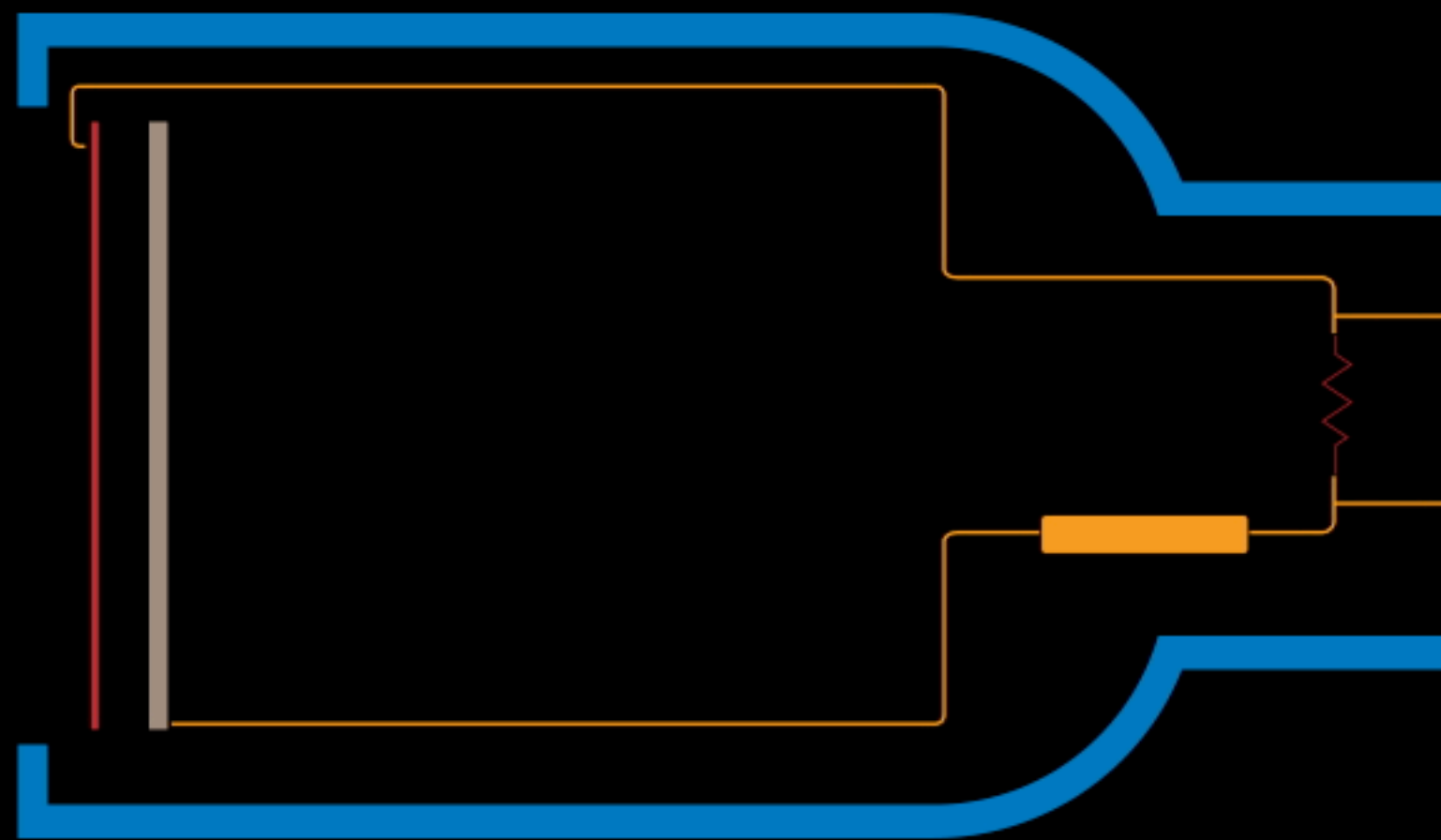
RECORDING SOUND

M I C R O P H O N E S

DYNAMIC

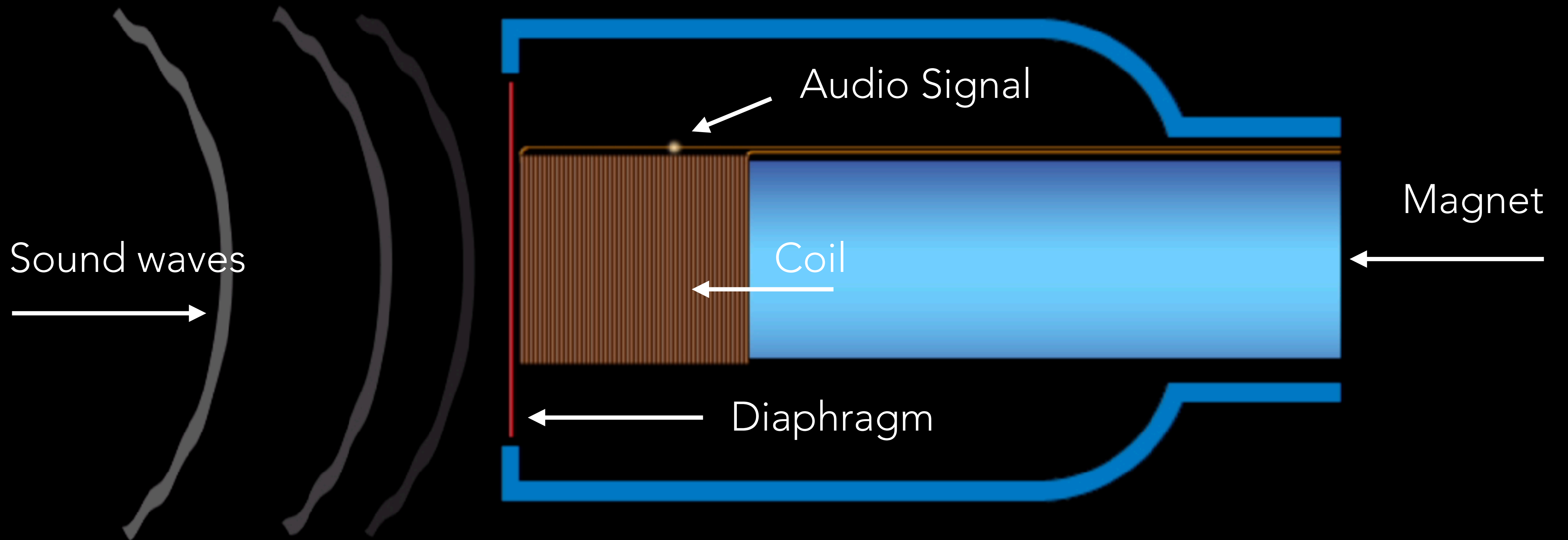


CONDENSER



COMPONENTS, DYNAMIC MIC

DYNAMIC

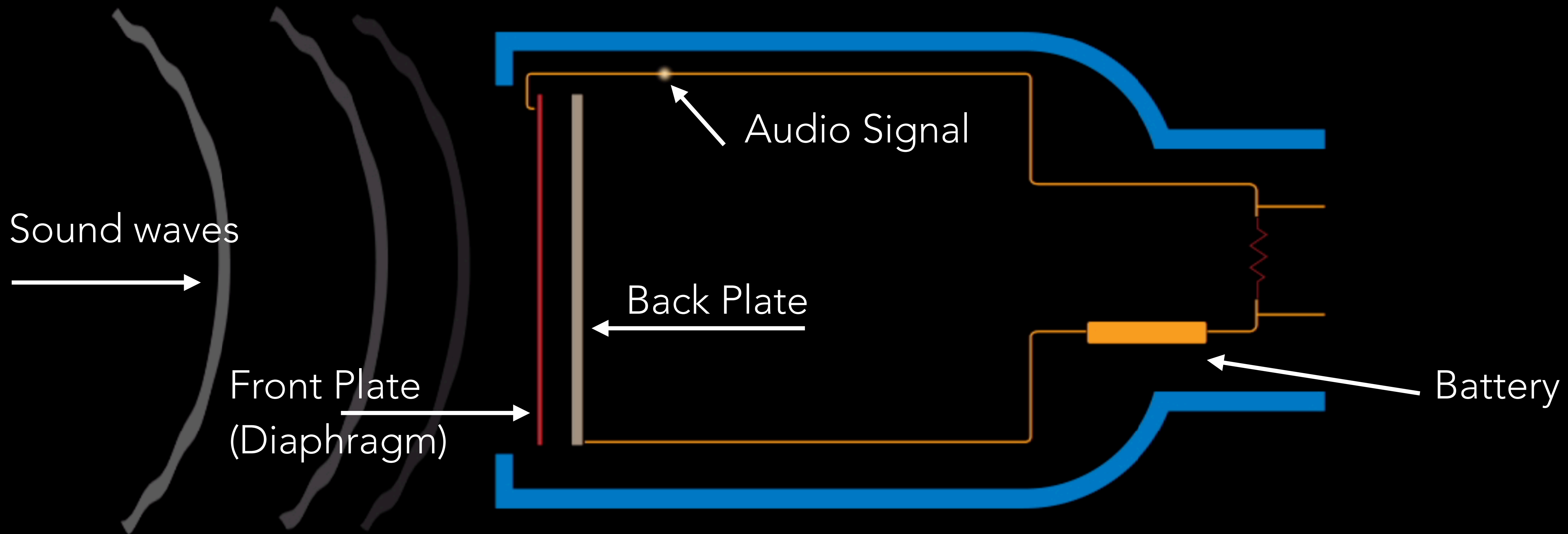


DYNAMIC MICS – GENERALITIES

- Unpowered. Do not require batteries.
- Tend to be more robust and resistant to hard use.
- Need a stronger Pre-amps than condenser mics.
- Cheaper than condenser mics.
- Good for recording louder sounds.

COMPONENTS, CONDENSER MIC

CONDENSER



CONDENSER MICS – GENERALITIES

- Require power to function.
- Tend to be more delicate and easier to damage.
- Need less gain increase at the pre-amp.
- More expensive than dynamic mics.
- Better fidelity when recording delicate sounds.

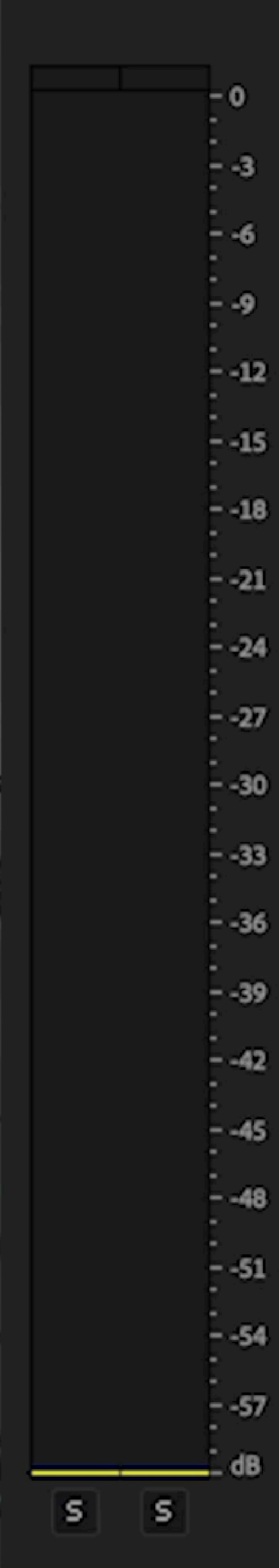
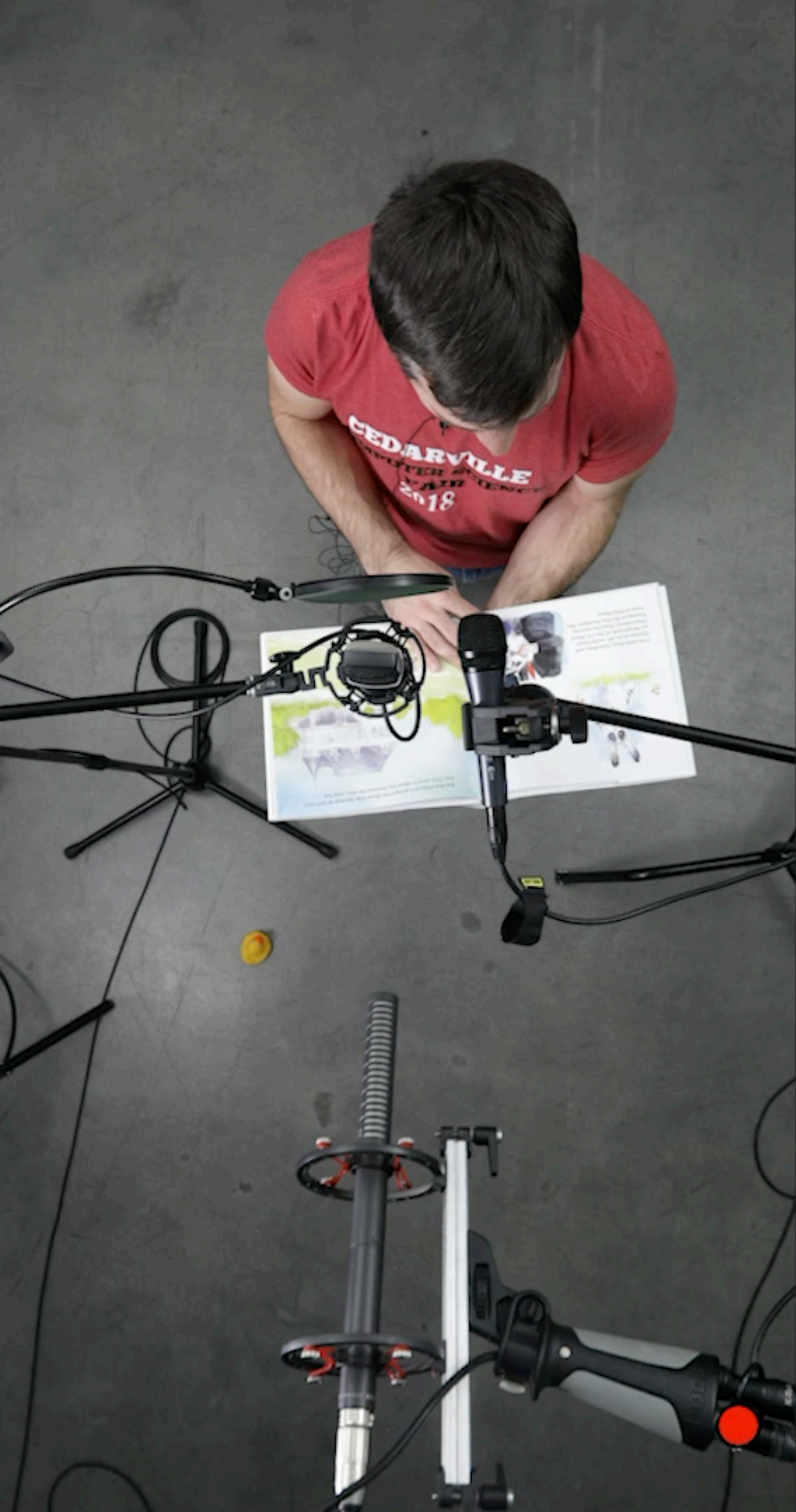
HUMAN AUDIO RESPONSE

- Frequency response of the human ear is around 20Hz - 20 KHz
- All microphones have a range of frequencies they are most responsive to.
- Most microphones are calibrated to have excellent frequency response in the range of the human voice.
- Some specialty microphones are designed for different frequency ranges. Often used in musical recording.

Internal Camera Microphone



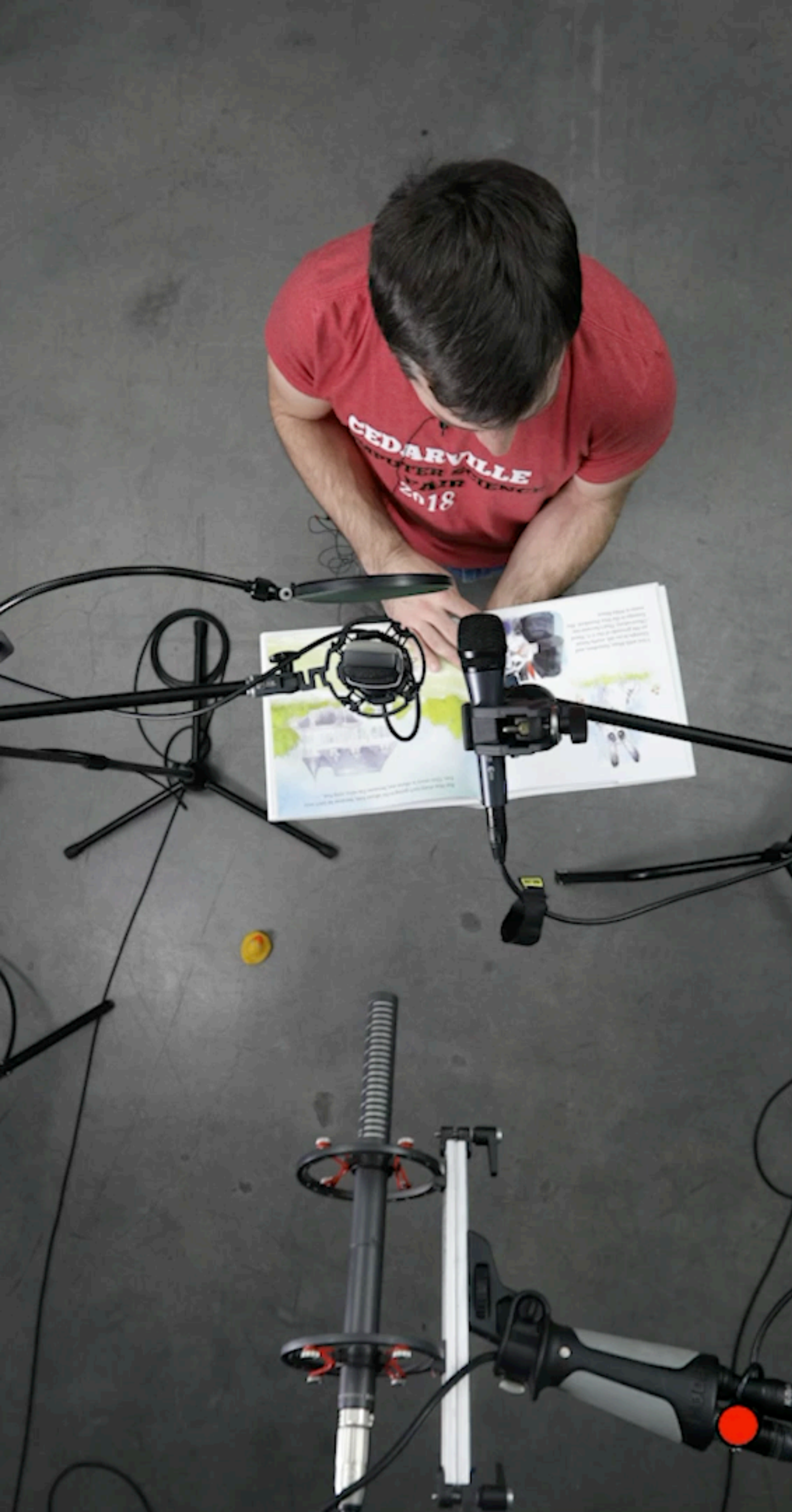
Internal



HANDHELD MICROPHONE



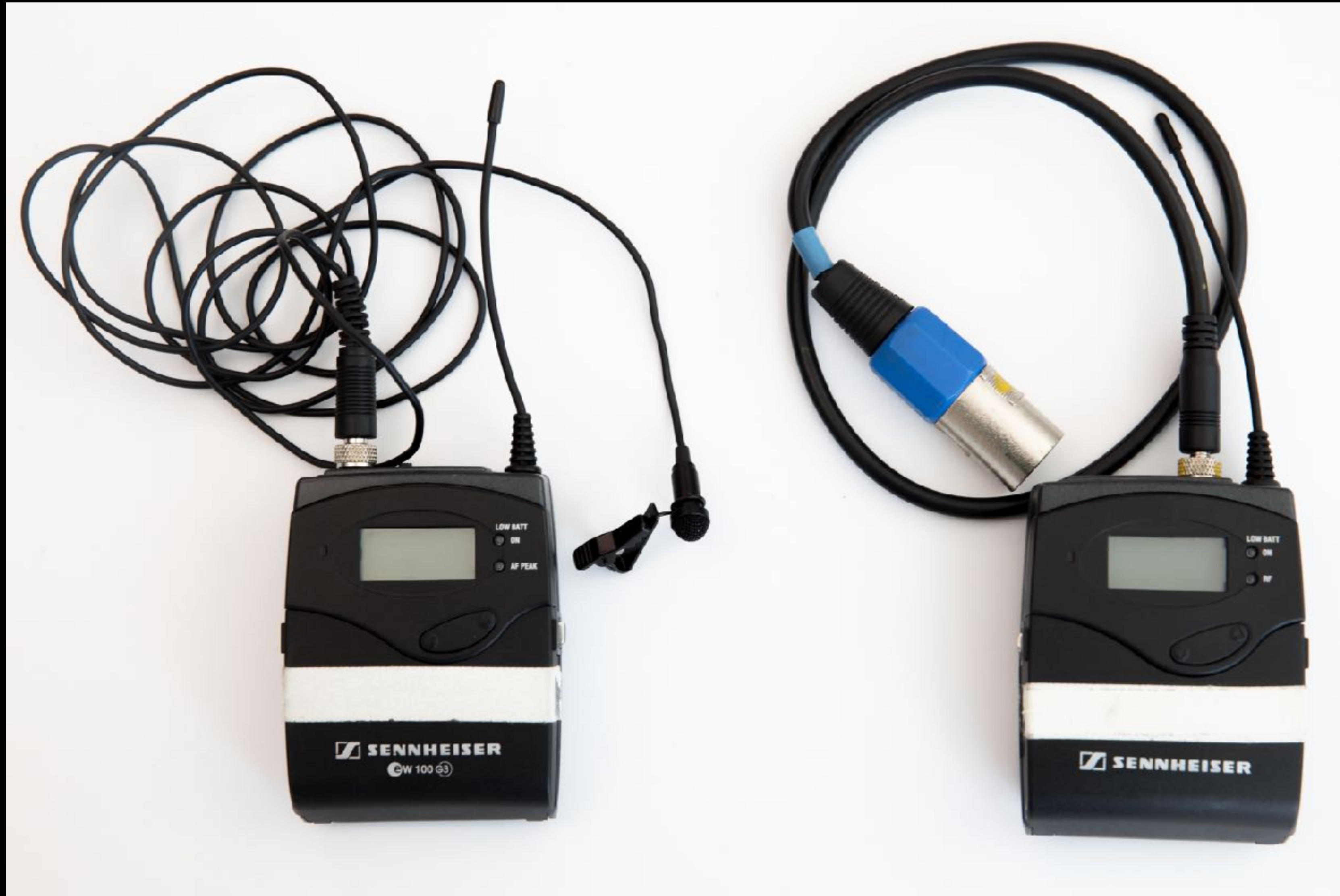
Handheld



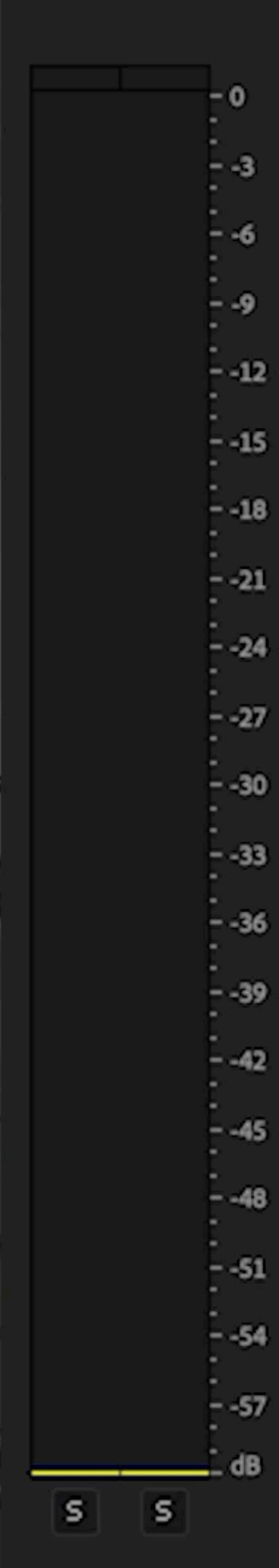
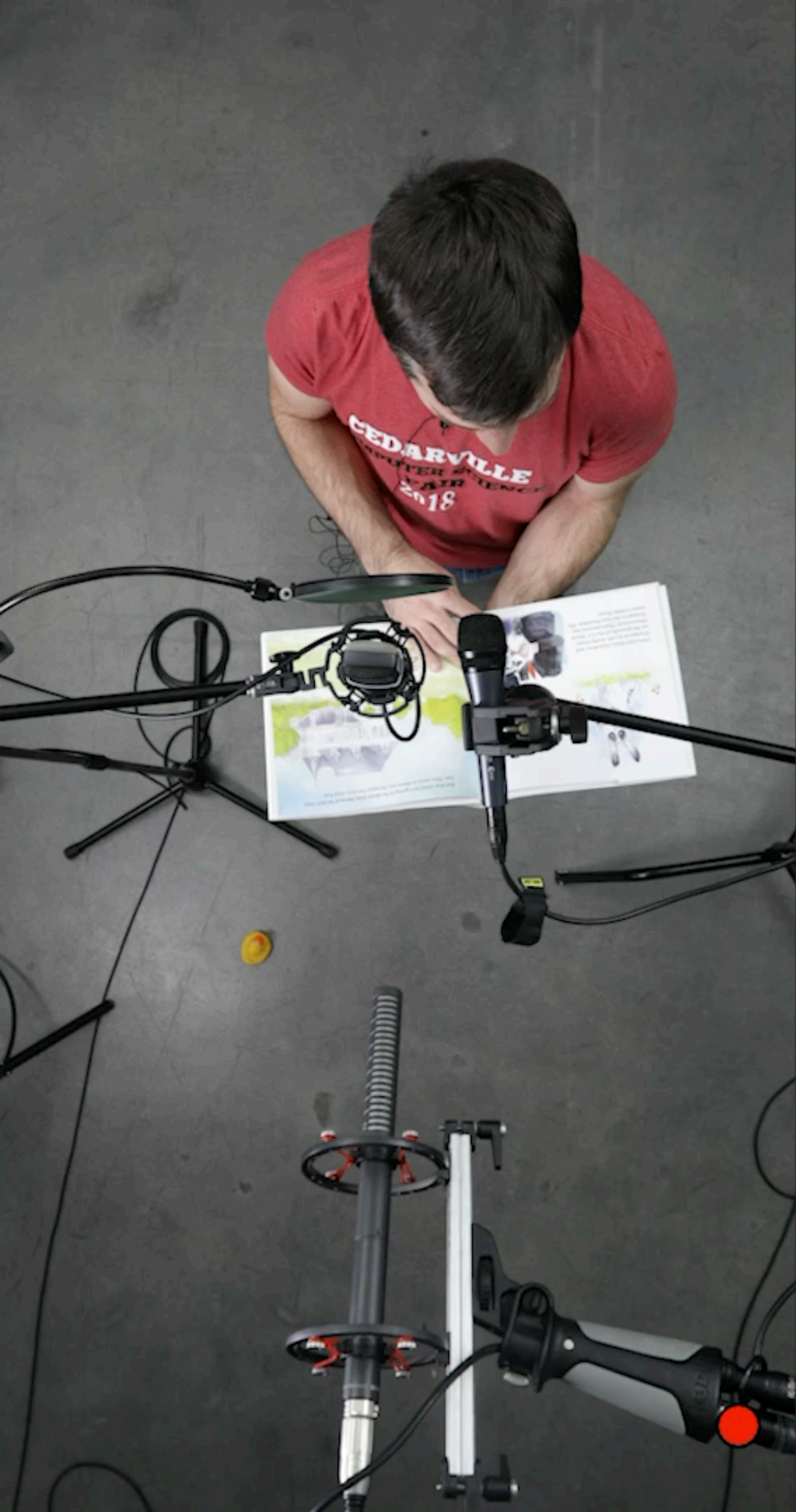
LAV MICROPHONE



WIRELESS



Lavalier



SHOTGUN MICROPHONE



Microphone Mount

SHOTGUN MICROPHONE

Shock Mount



SHOTGUN MICROPHONE

Zepplin

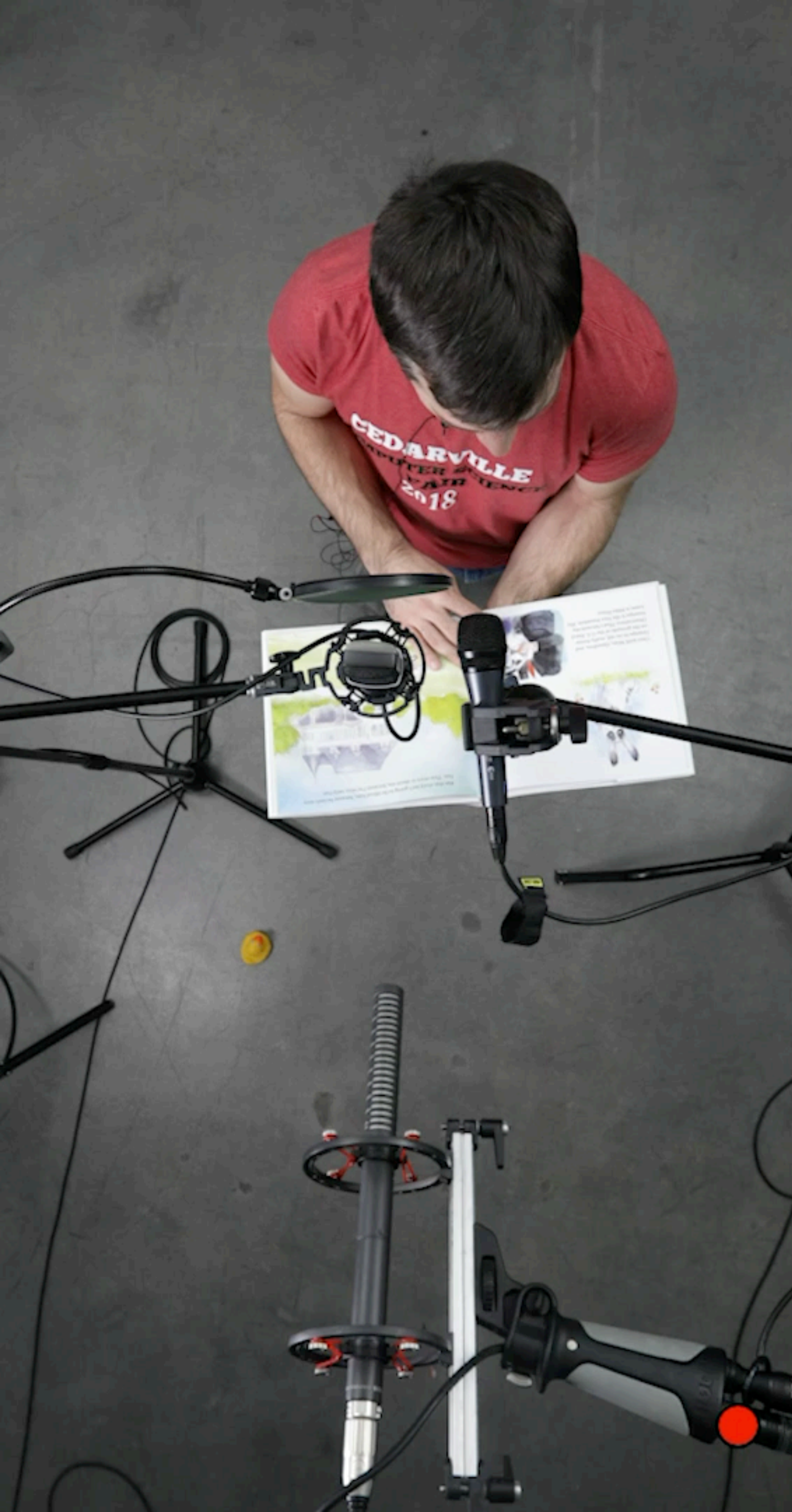


SHOTGUN MICROPHONE

WindScreen
a.k.a Dead Cat

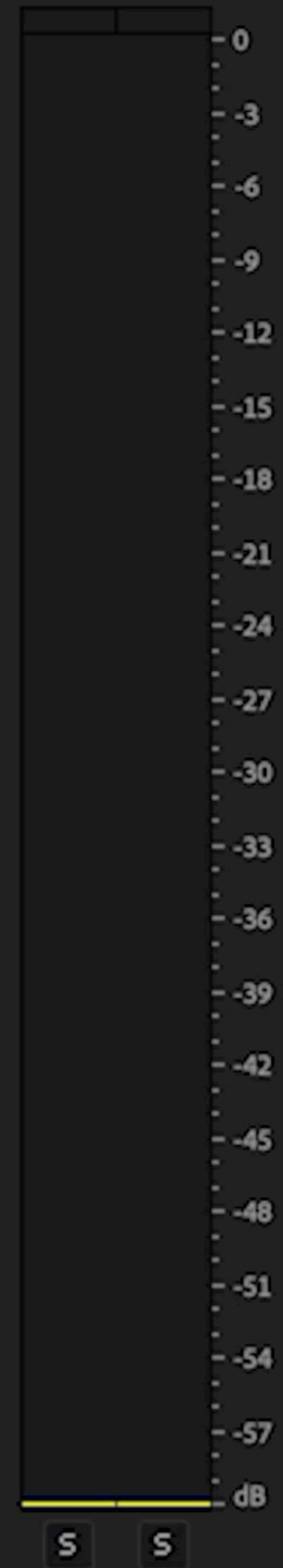
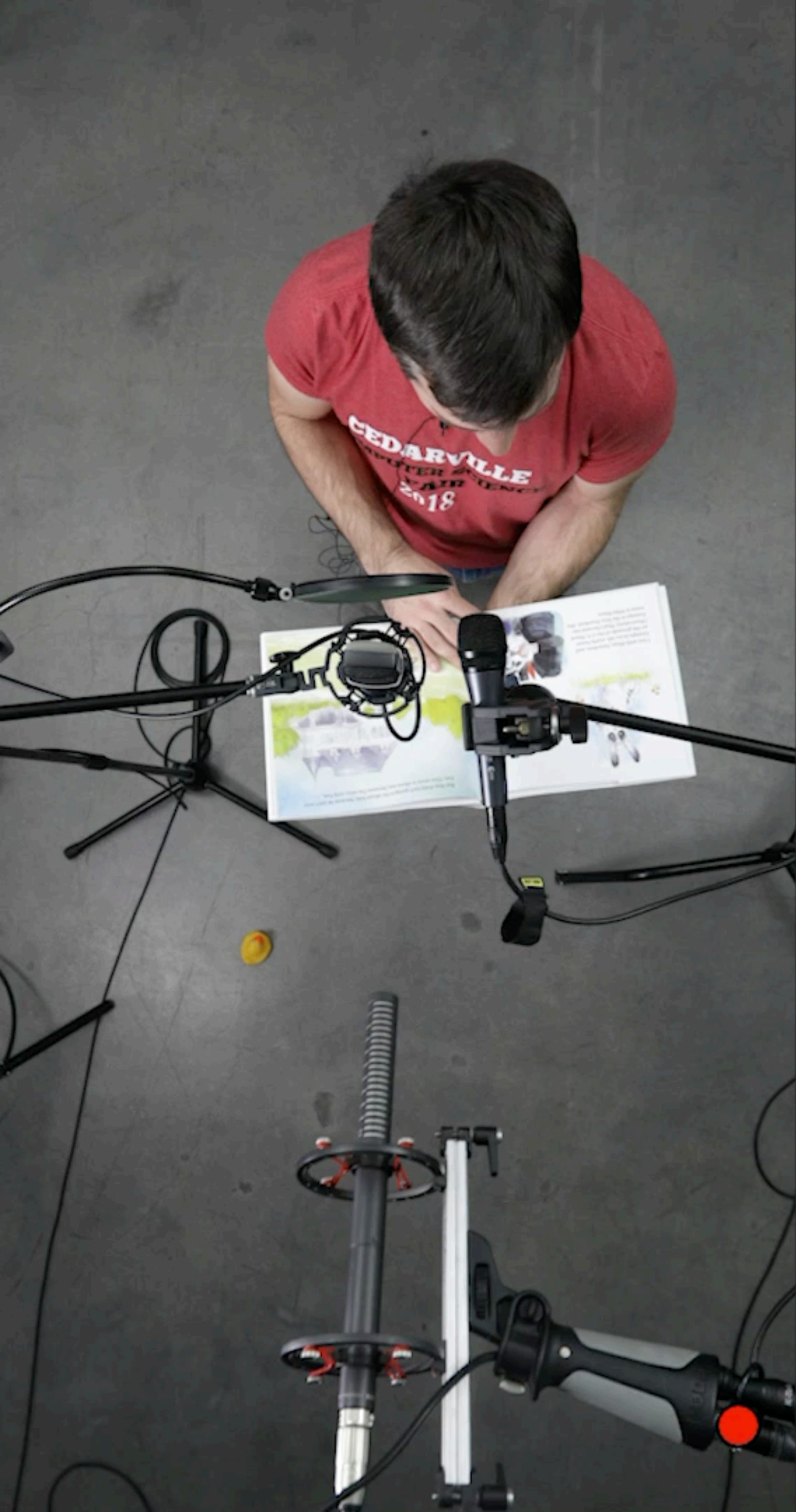


Boom



LARGE DIAPHRAGM



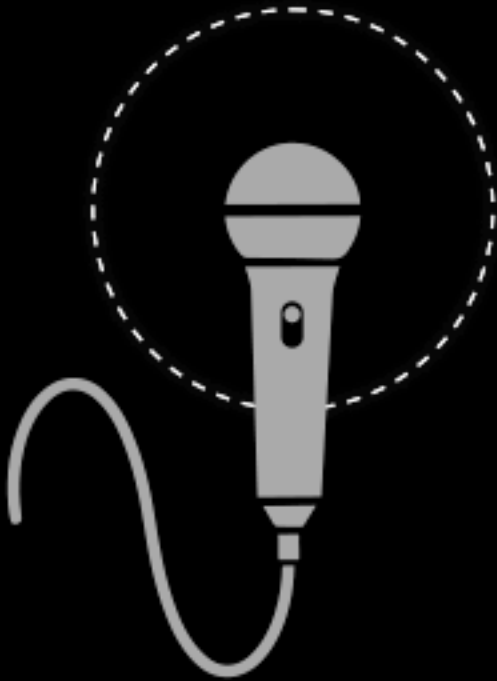


Large Diaphragm

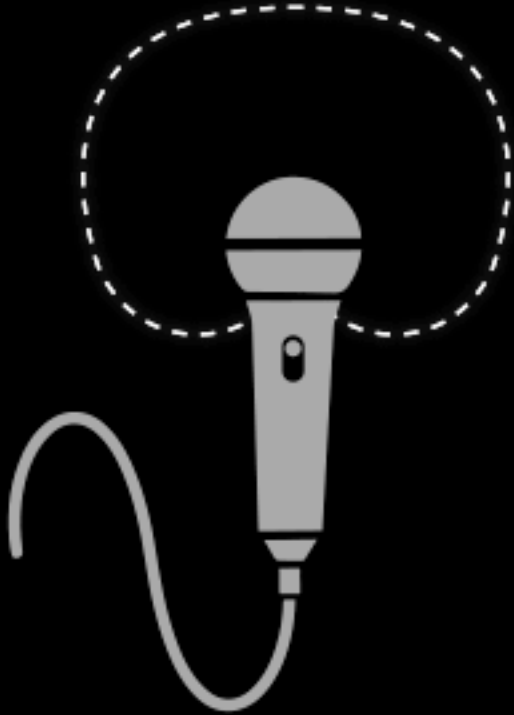


- Audio recording examples

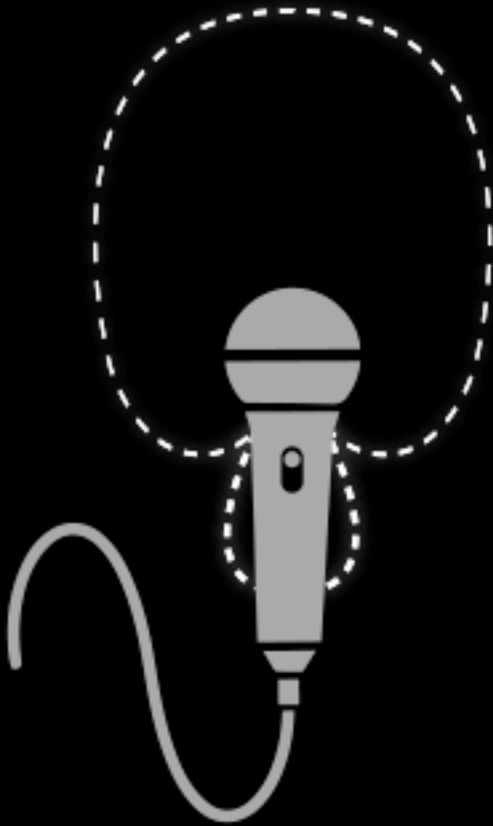
PICKUP PATTERNS



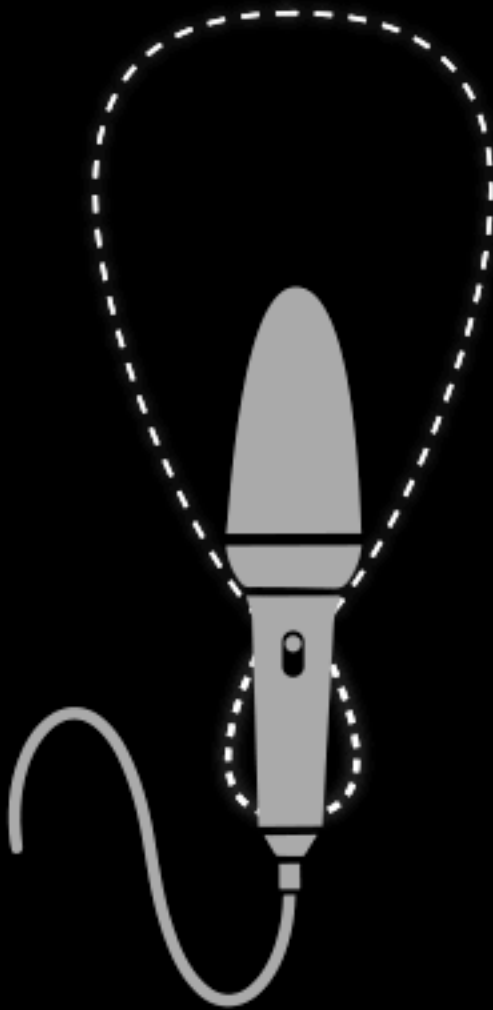
OMNIDIRECTIONAL



CARDIOID



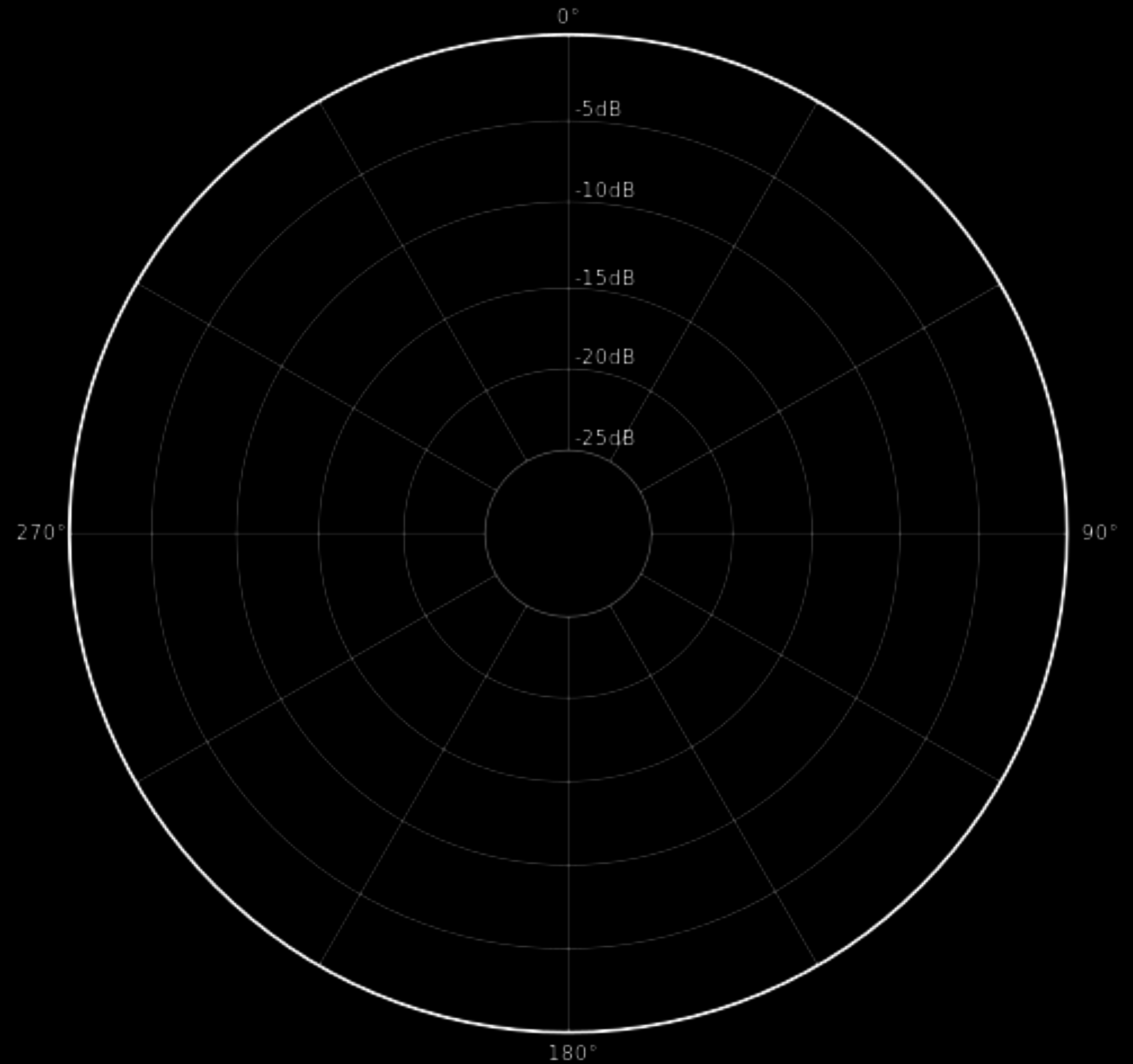
HYPERCARDIOID



SHOTGUN

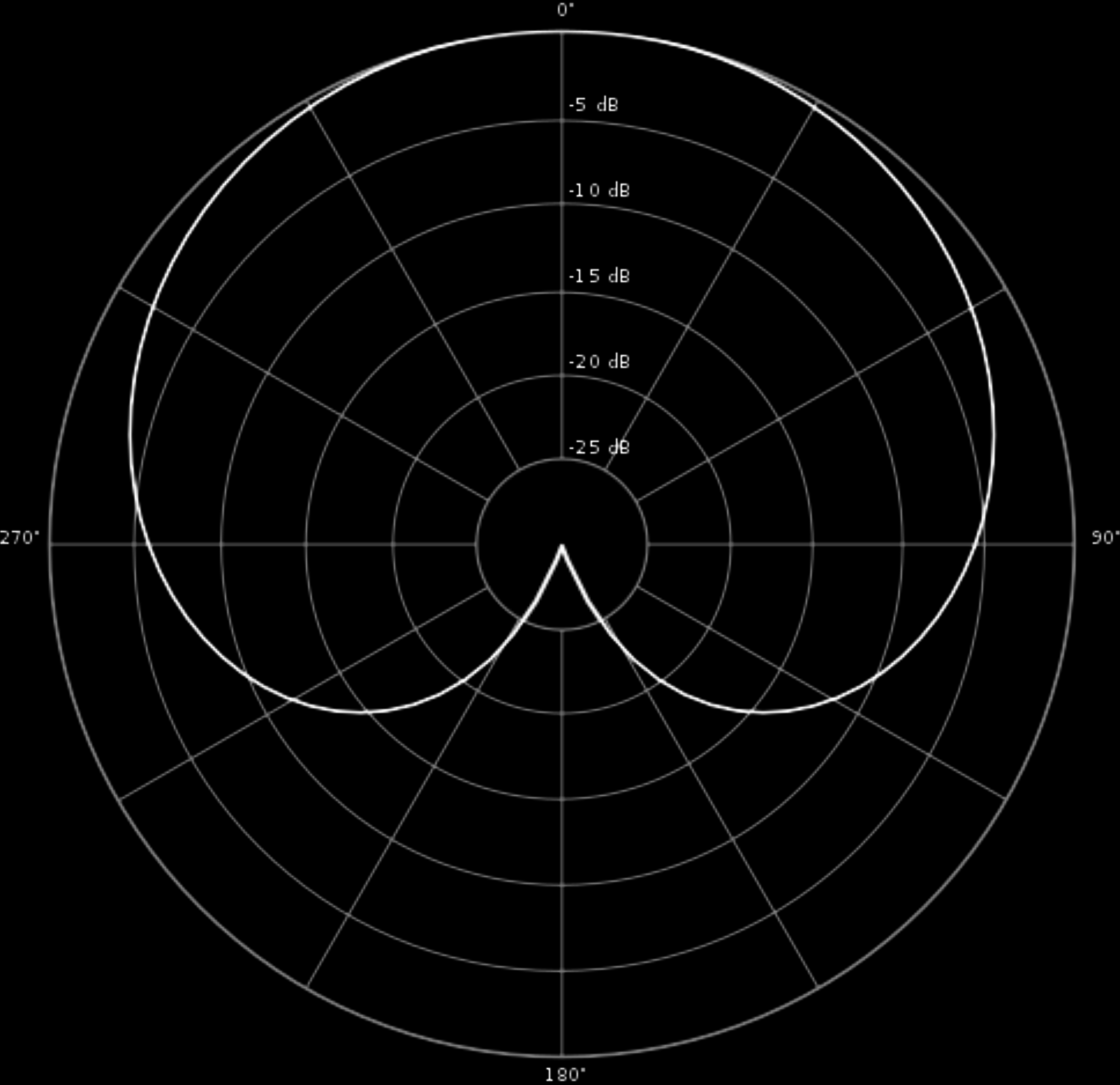
PICKUP PATTERNS

Omnidirectional



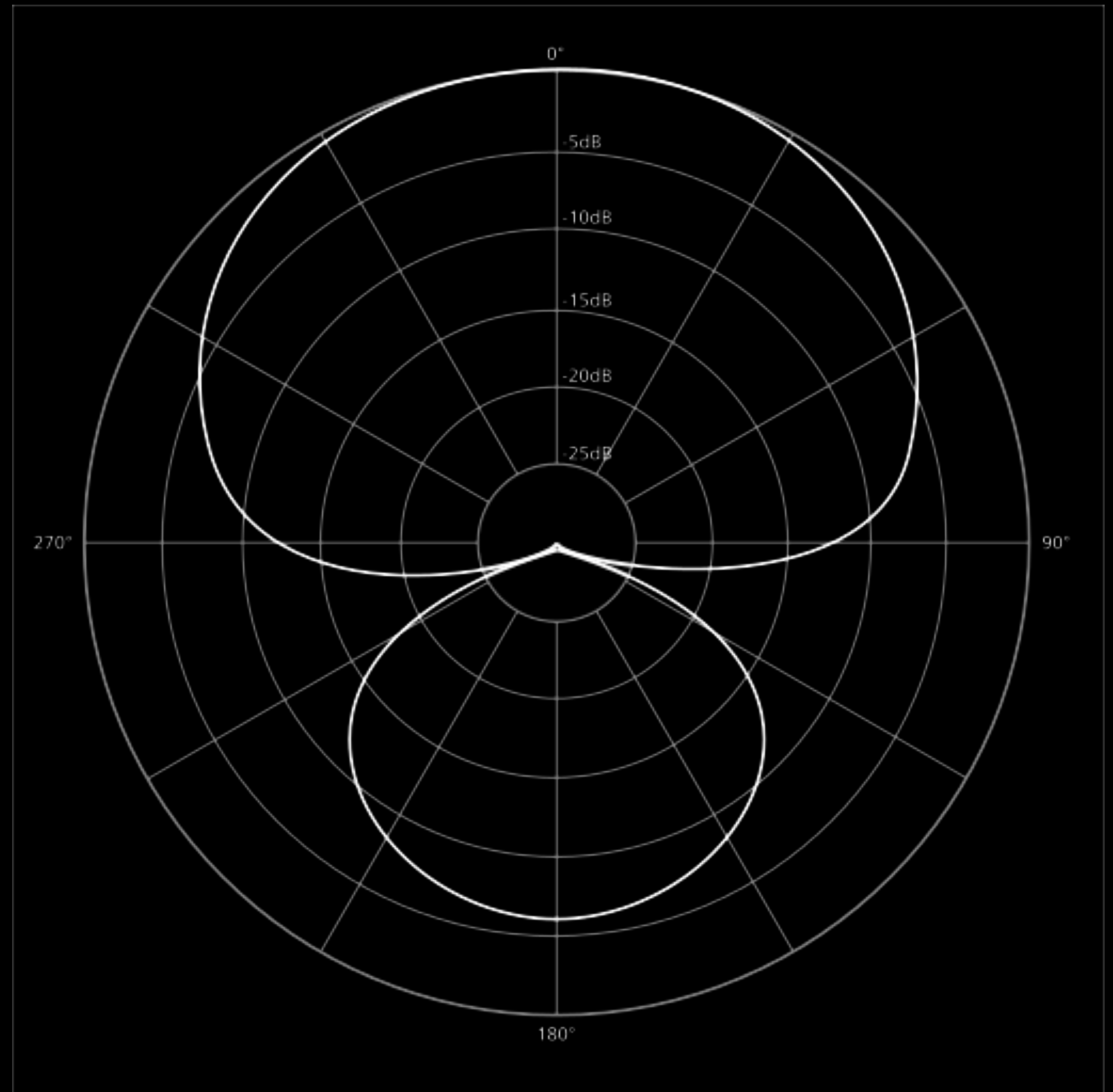
PICKUP PATTERNS

Cardioid



PICKUP PATTERNS

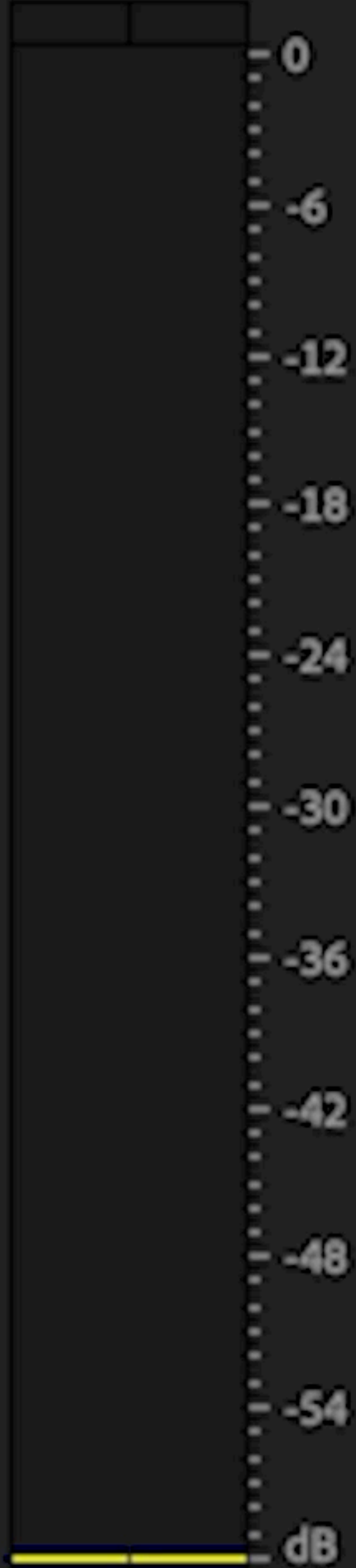
Hypercardioid



Microphone Proximity

- Microphones pick up audio better when they are proximal to the source.
- Directional microphones should have the source placed directly in the pick up pattern.

Boom



CEDARVILLE
COMPUTER SCIENCE
FAIR
2018

Gain Stages

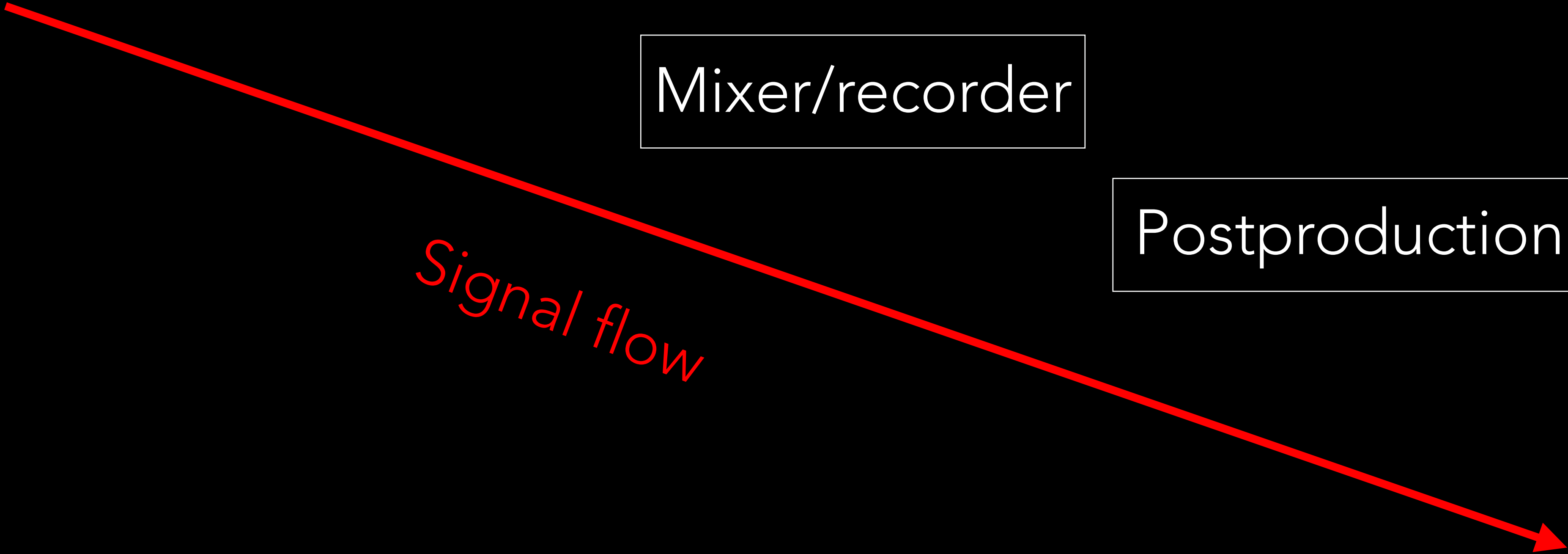
Microphone

Pre-amp

Mixer/recorder

Postproduction

Playback



MIC VS LINE LEVEL

- The signal coming off a microphone is a very low voltage which needs to be boosted.
- Pre amps are responsible for converting the microphone signal to line level.
- The quality of the pre-amp can have a strong effect on the quality of the audio recorded.
- Line level is a higher voltage and allow the signal to be transported over longer distnaces.

PHANTOM POWER

Allow you to power a microphone using a mixer or recorder. The microphone draws power from the mixer instead of an internal battery.

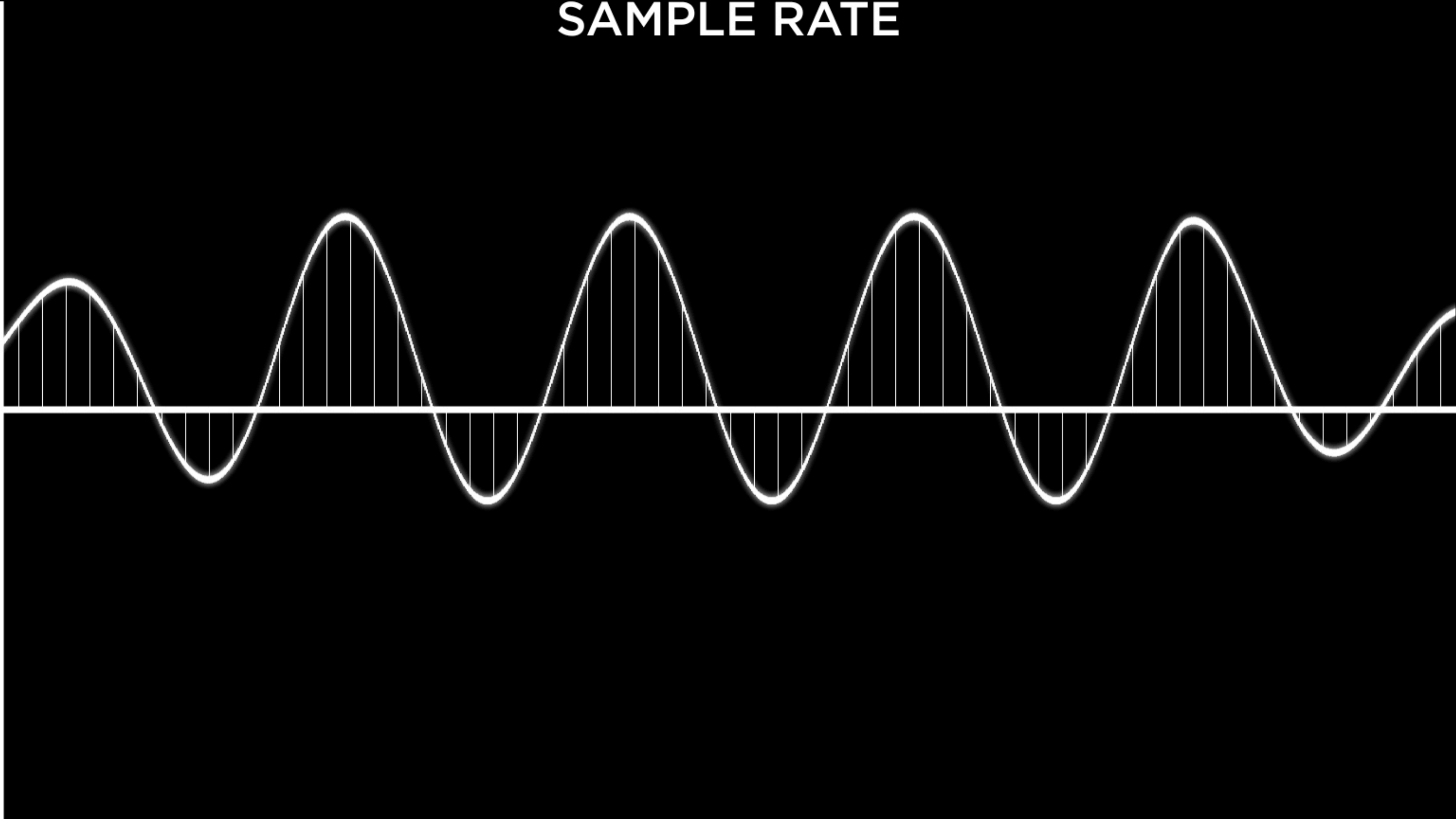


DIGITAL AUDIO

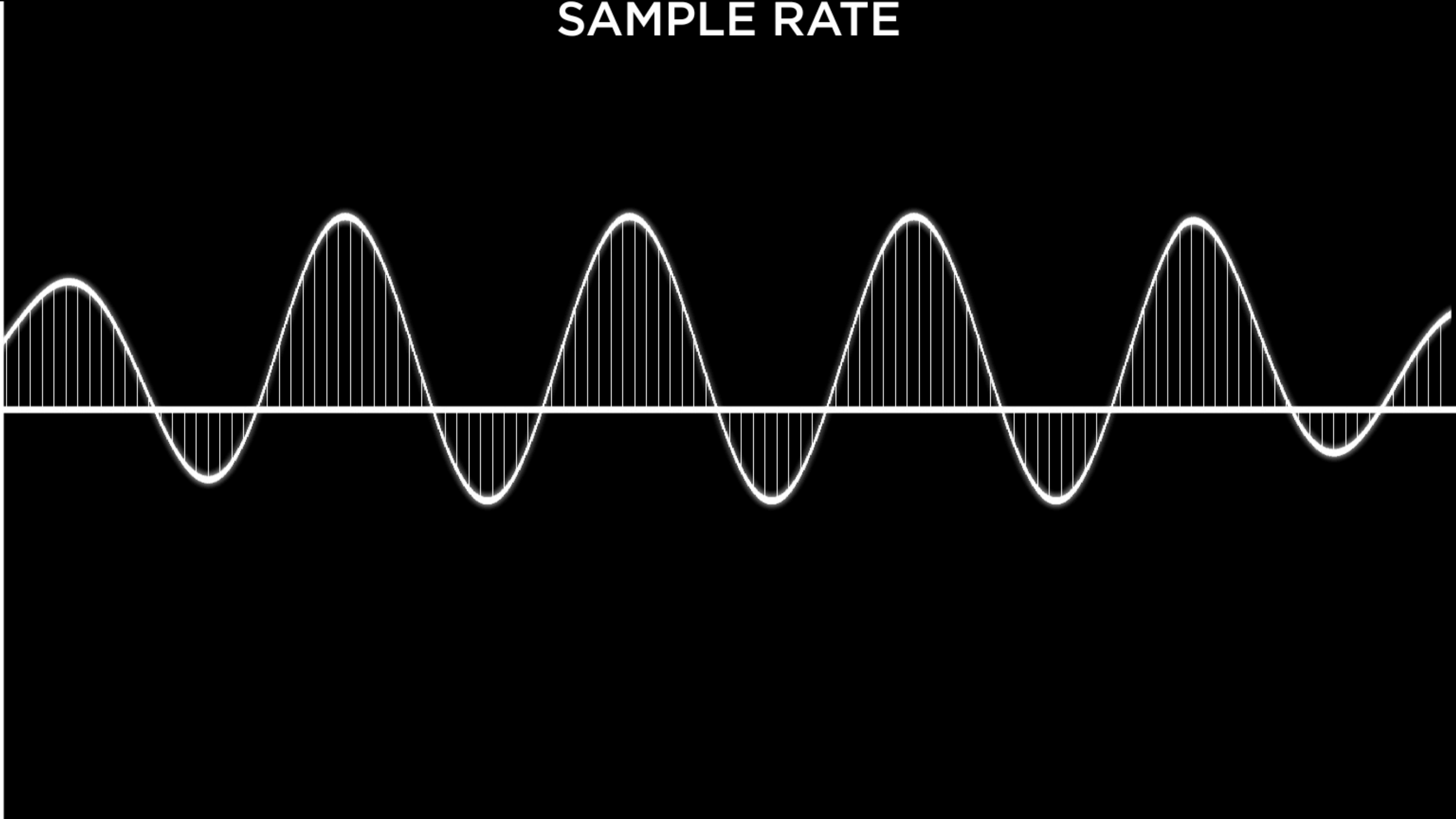
Sample rate

- Digital audio samples sounds many thousands of times per second. Each of these discrete samples makes up the sample rate.
- Low sample rates have decreased fidelity to the audio source.
- While increased sample rates have higher fidelity.

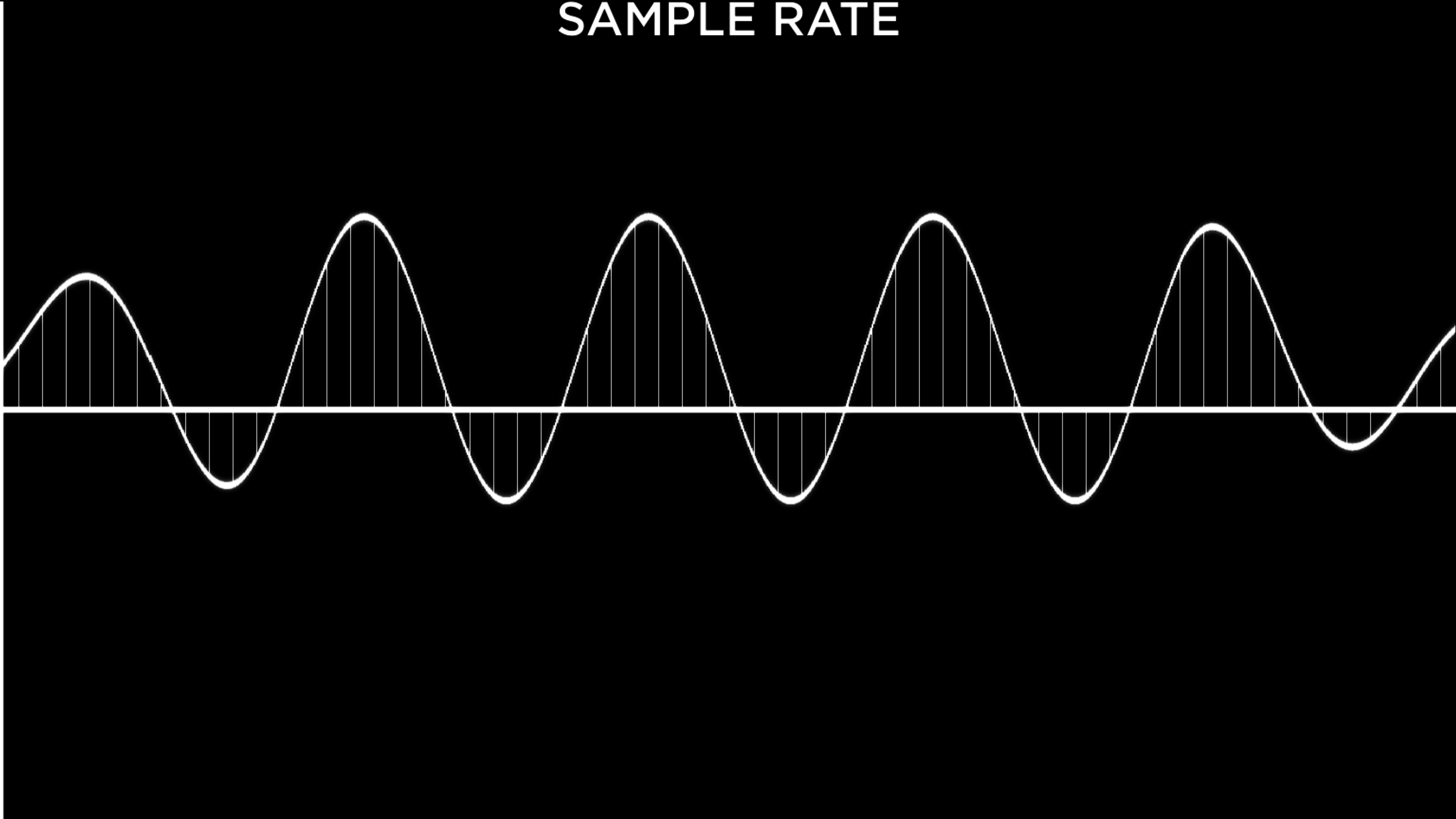
SAMPLE RATE



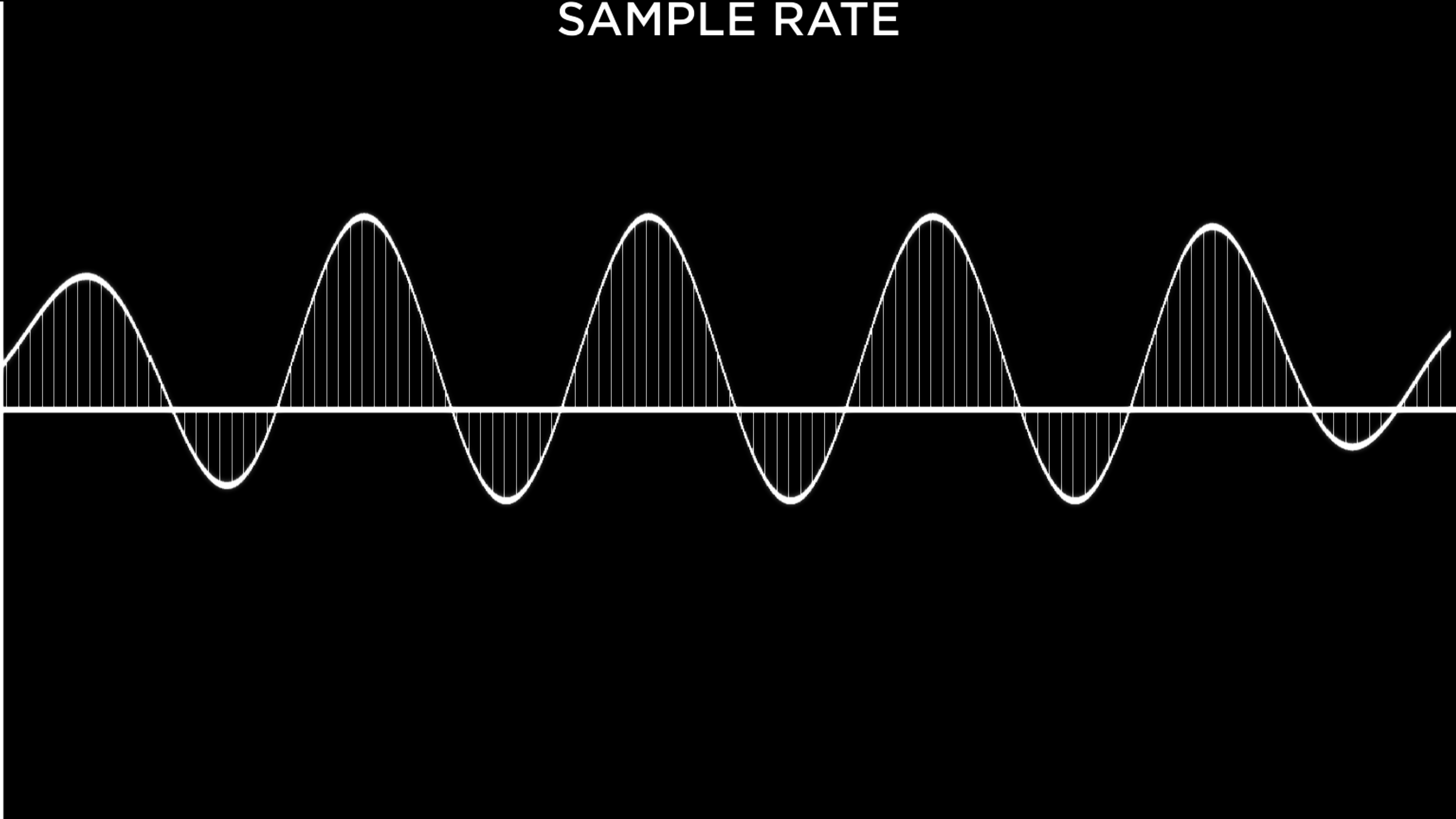
SAMPLE RATE

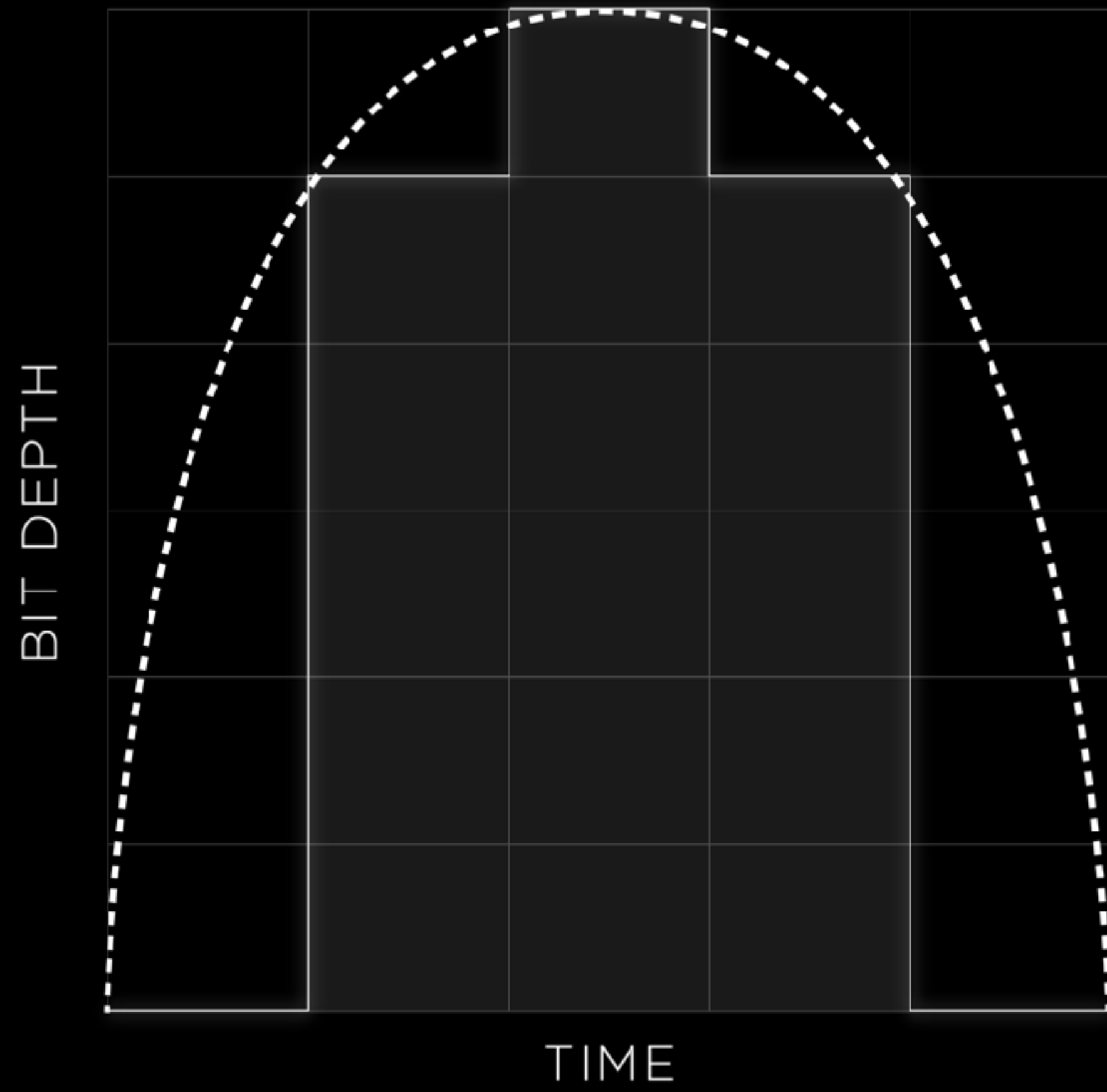


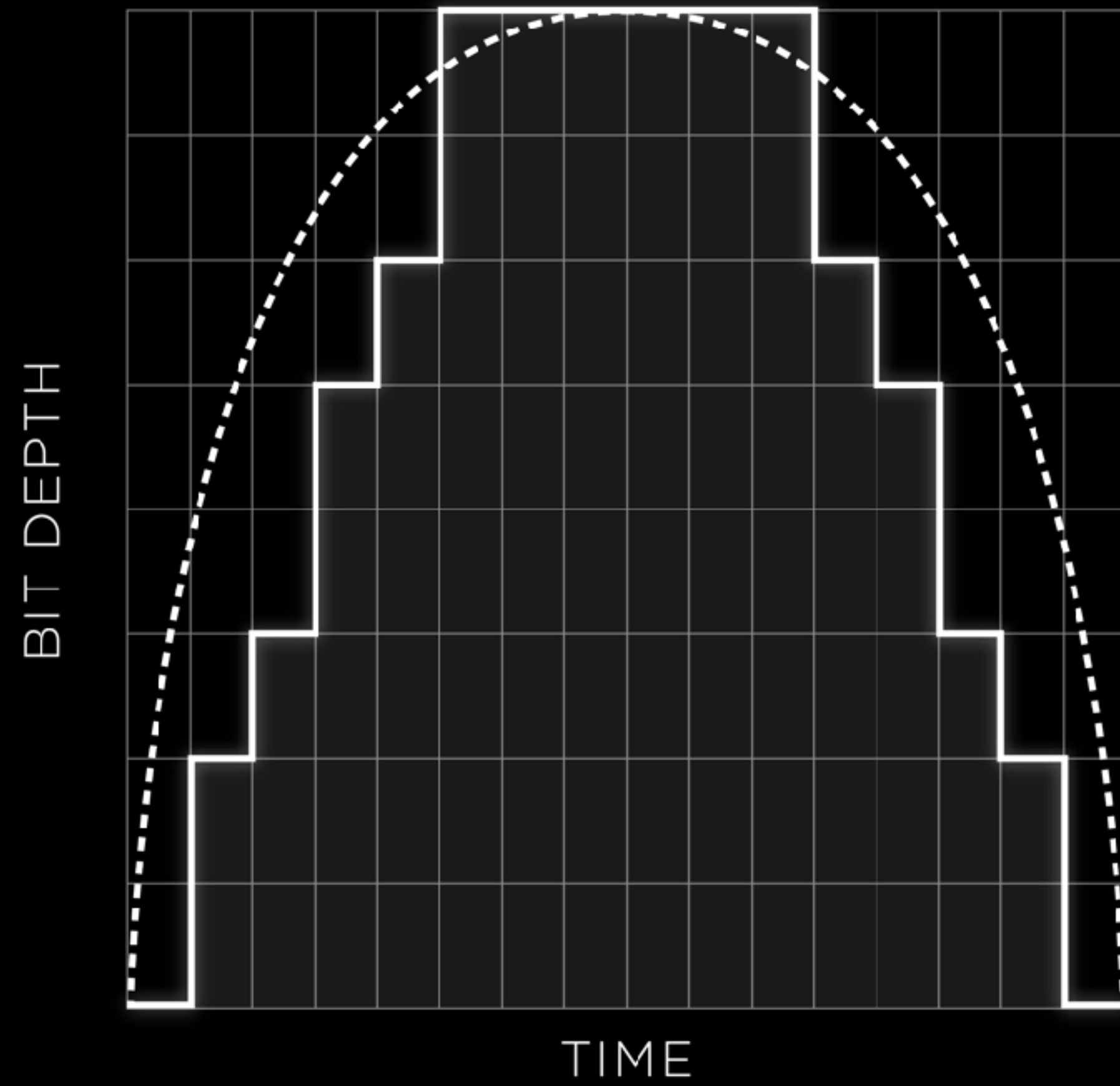
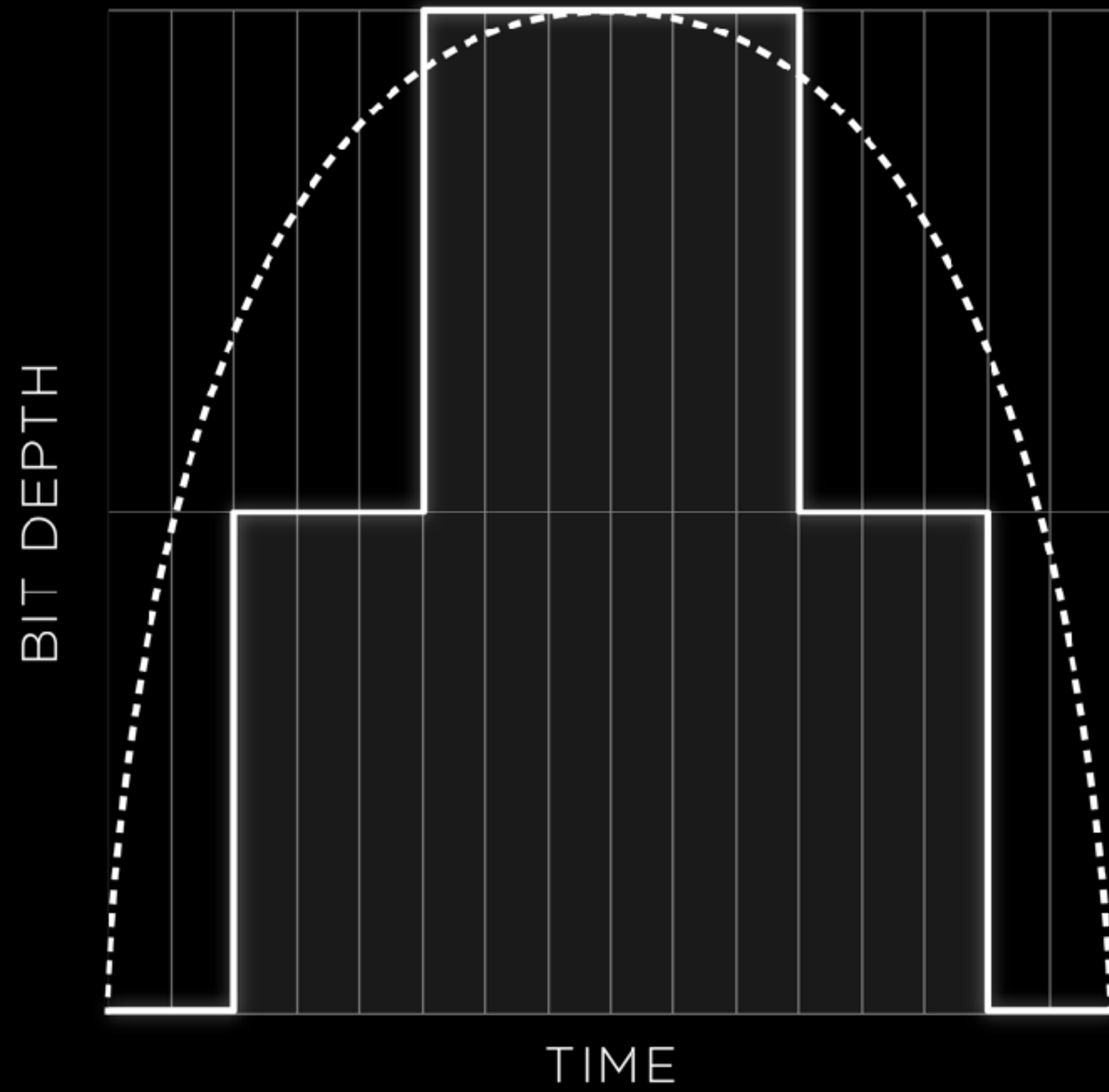
SAMPLE RATE



SAMPLE RATE







COMMON SAMPLE RATES AND BIT DEPTHS

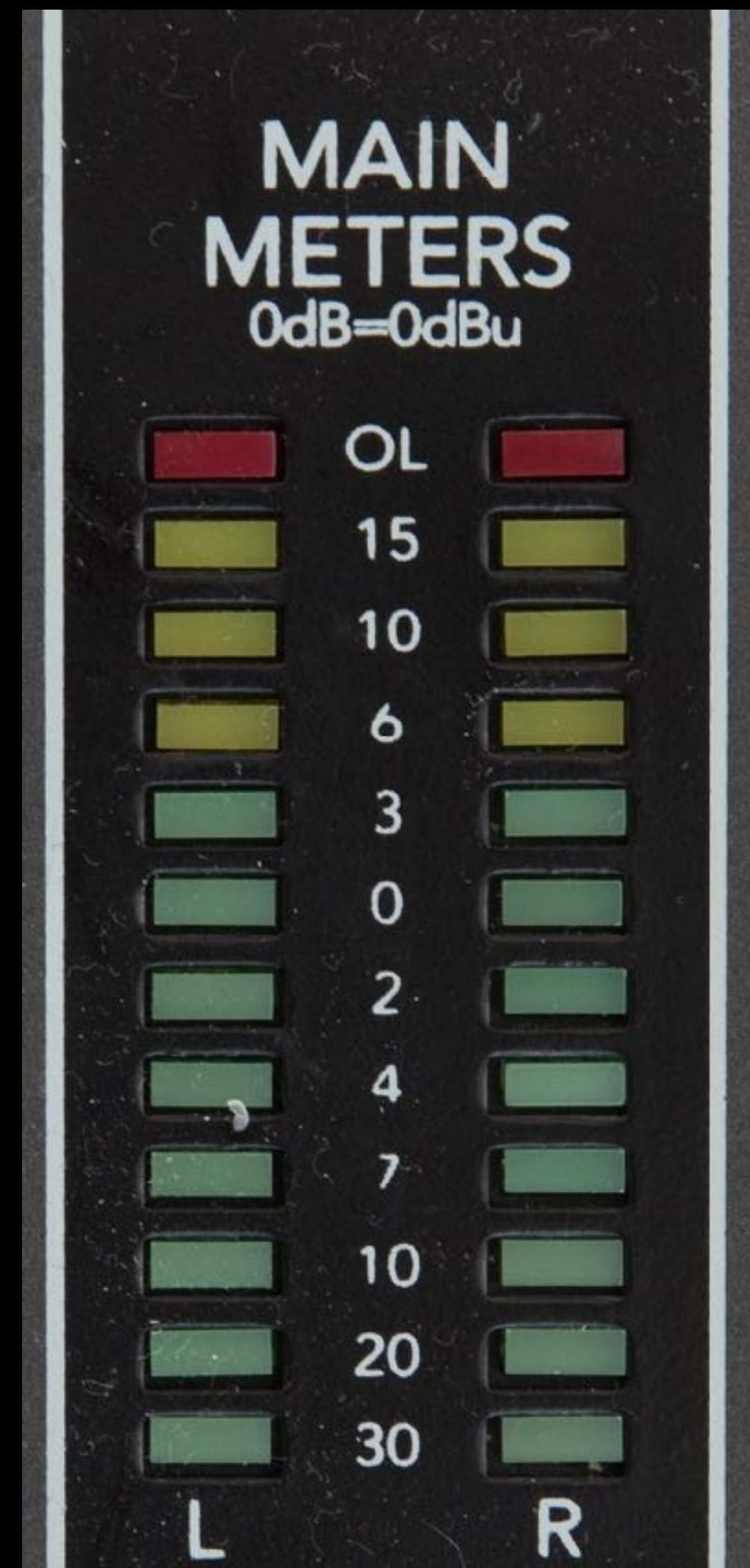
- CDs = 44.1 KHz
 - 44,100 samples per second
- Pro video = 48 KHz
 - 48,000 samples per second
- 24 Bit or 2^{24} possible values
- 16 Bit or 2^{16} possible values

COMMON FILE FORMATS

	LOSSLESS	COMPRESSION LEVEL	MADE BY
WAV	YES	NONE	MICROSOFT / IBM
AIFF	YES	NONE	APPLE
MP3	NO	HIGH	FRAUNHOFER INSTITUTE
AAC	NO	HIGH	AT&T BELL LABORATORIES, FRAUNHOFER IIS, DOLBY LABORATORIES, SONY CORPORATION AND NOKIA
WMA	NO	HIGH	MICROSOFT

VU METERS

Digital



Analog

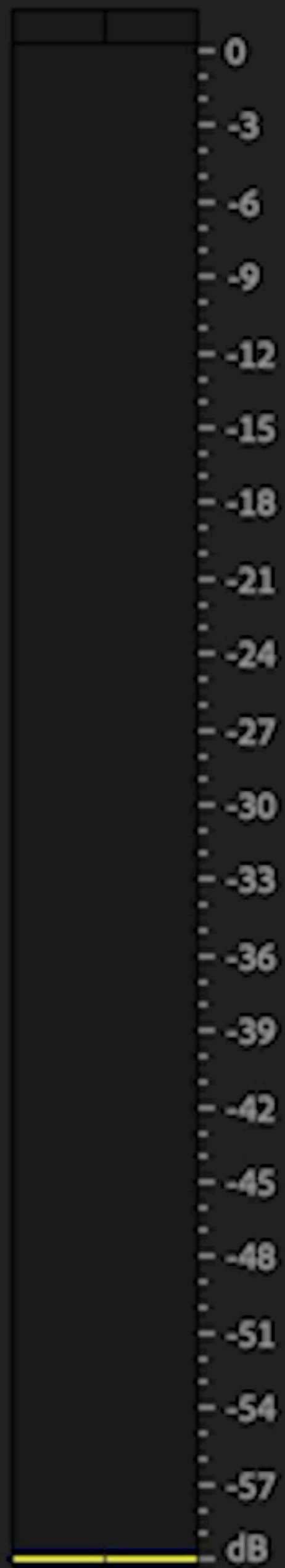
WHERE TO SET LEVELS

ANALOG AT 0

DIGITAL AT -12DB

Recording Levels





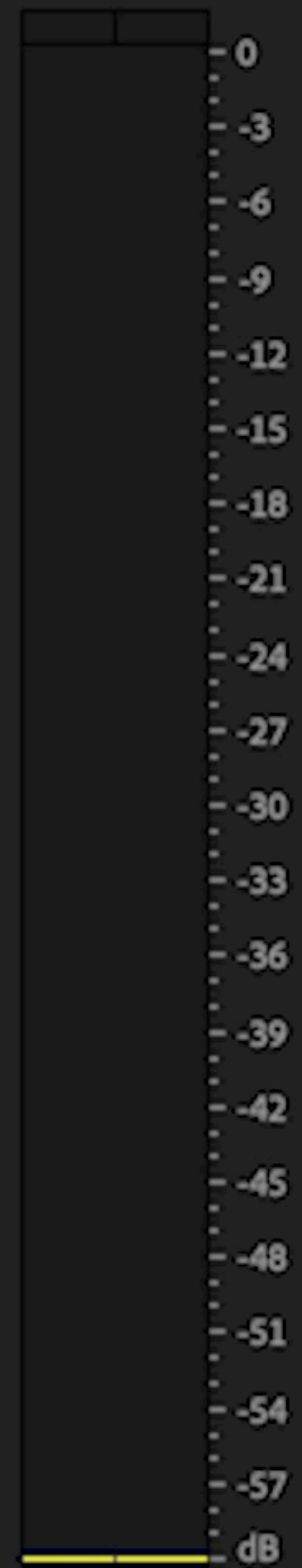
S S



Lavalier Normal

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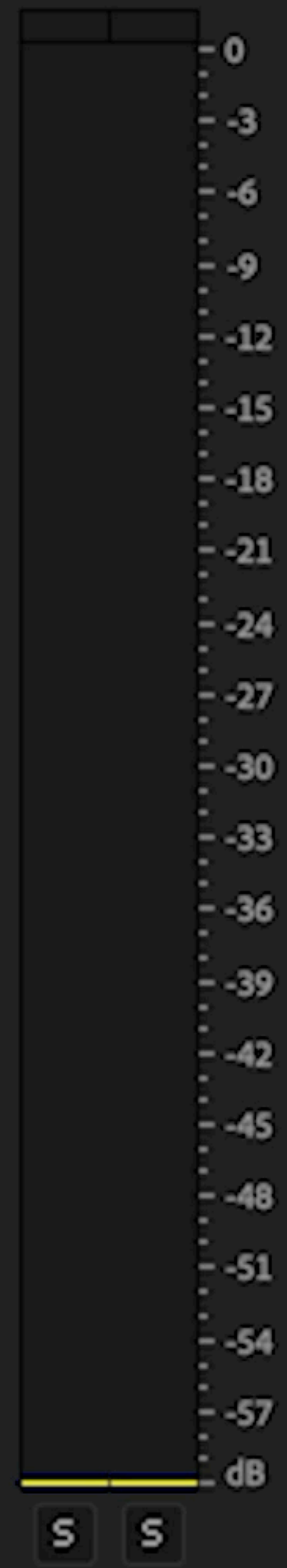
Lavalier Low



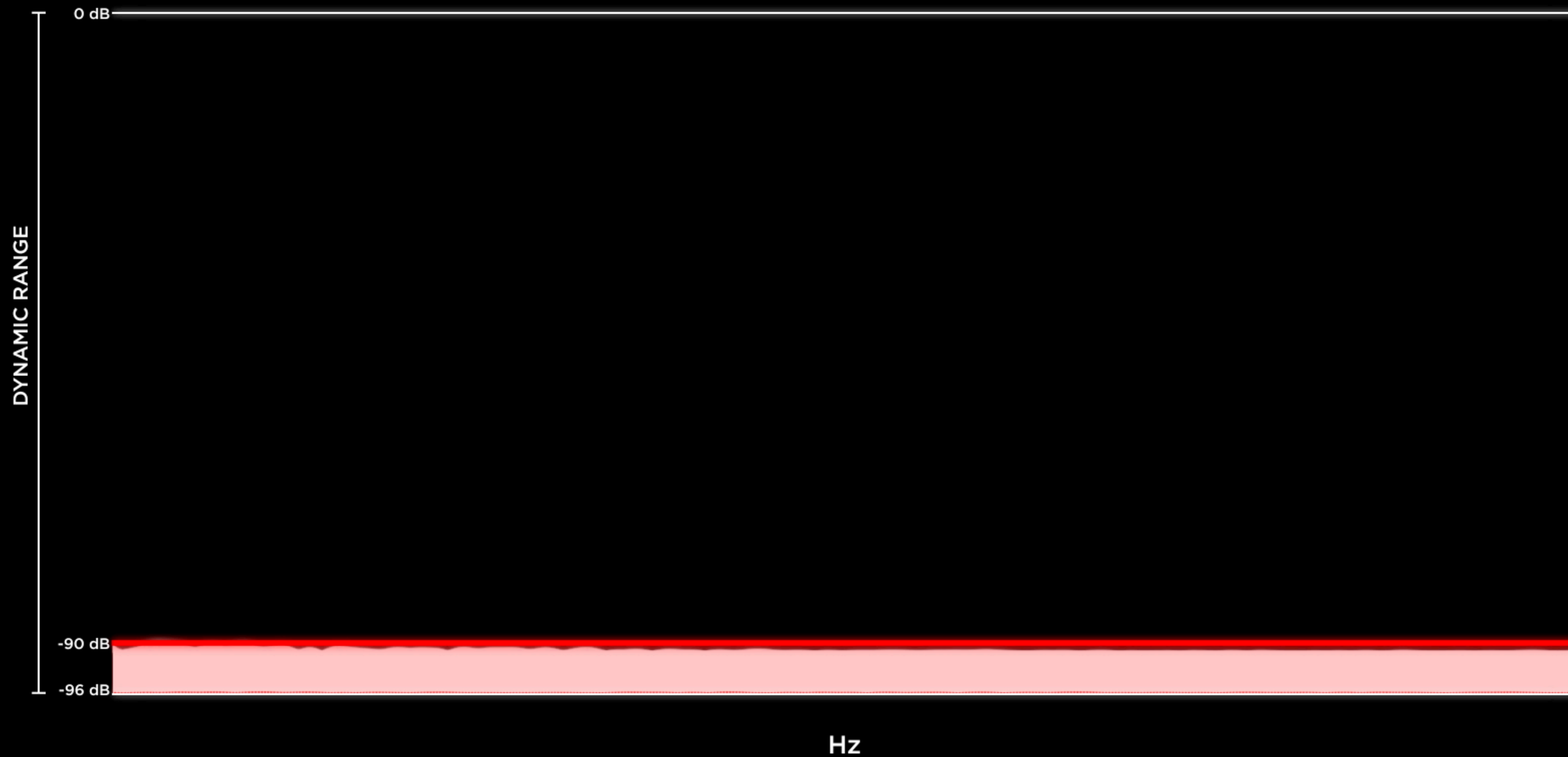
S S



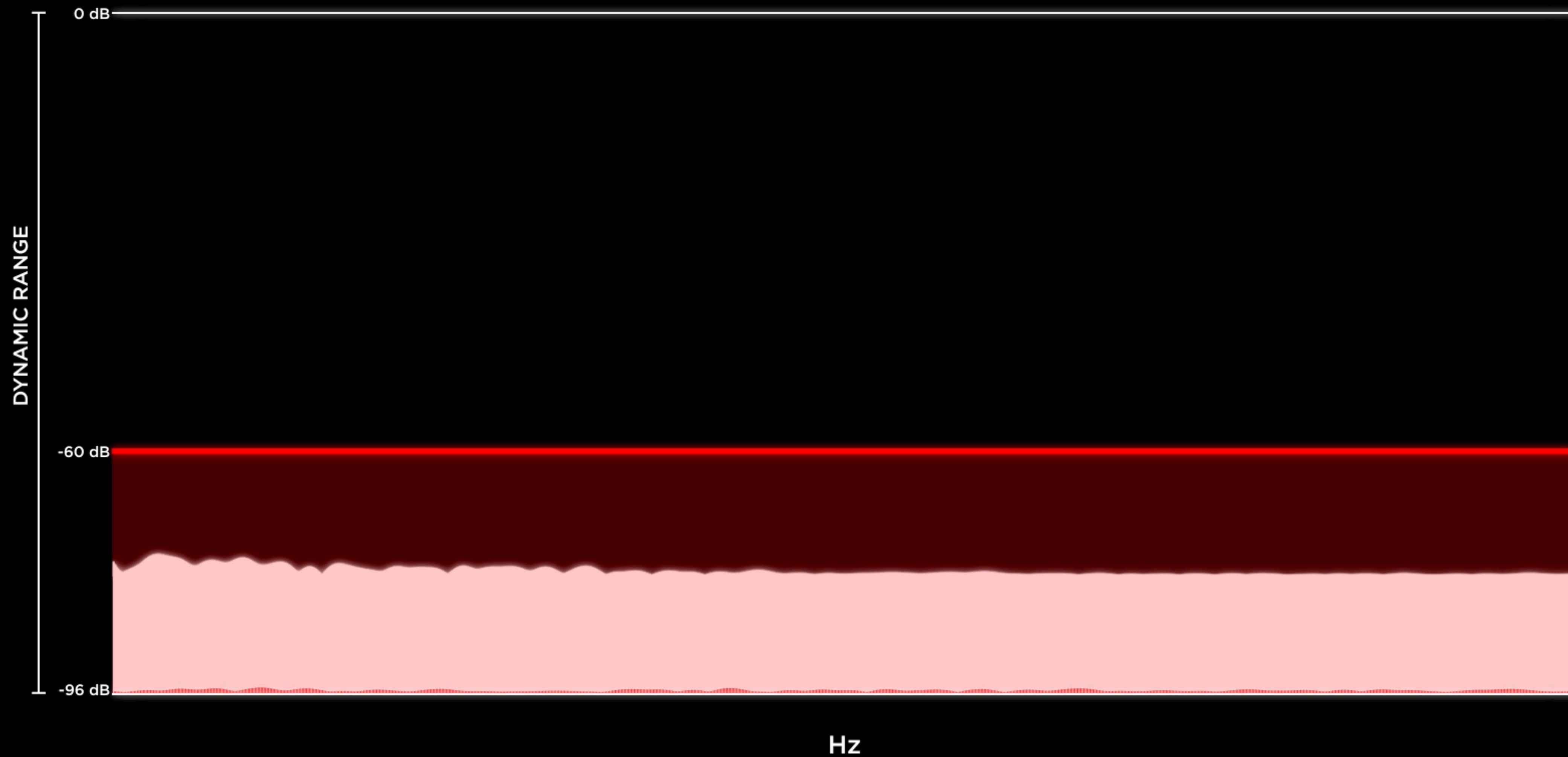
Lavalier High



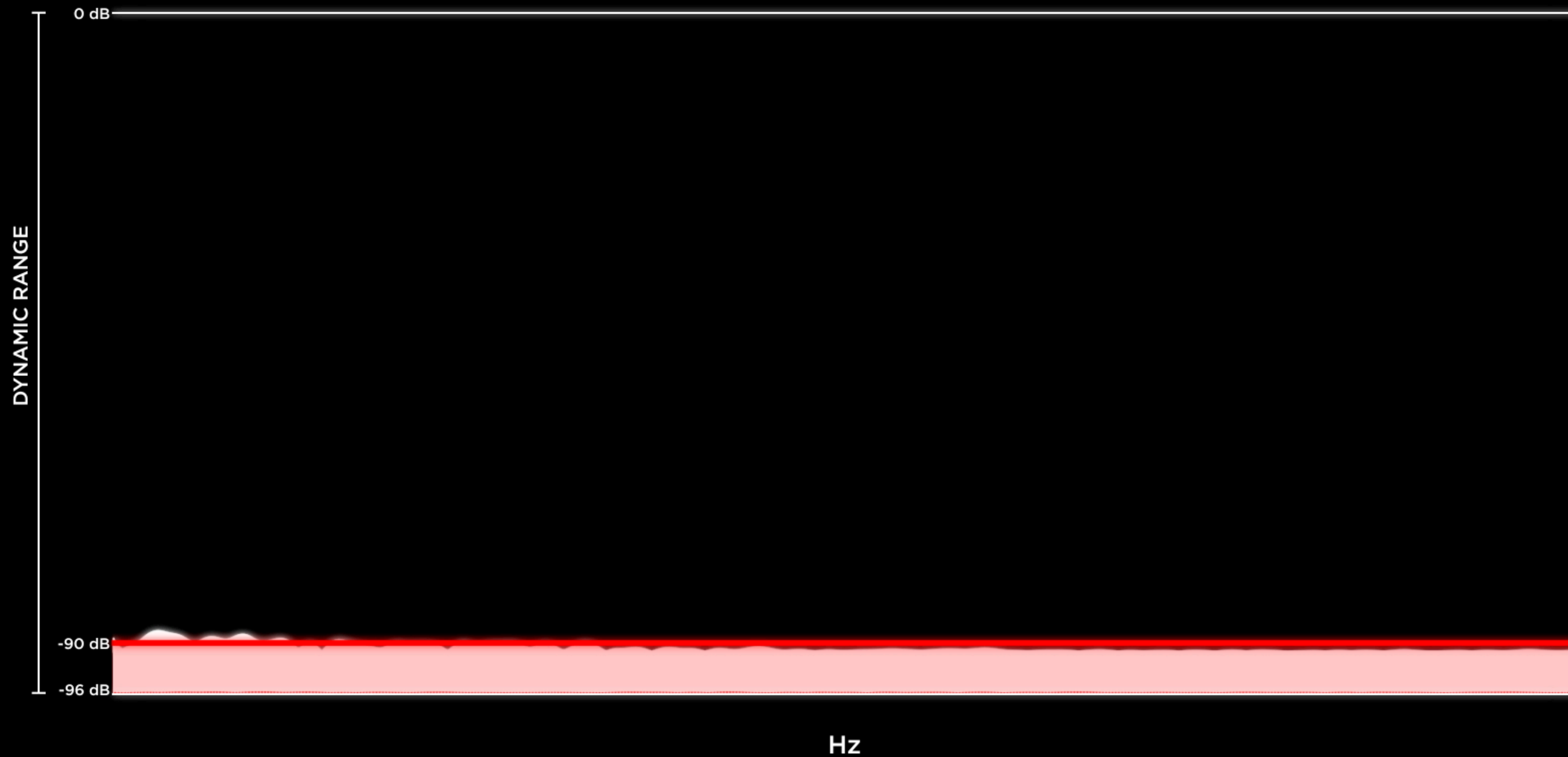
SIGNAL TO NOISE RATIO



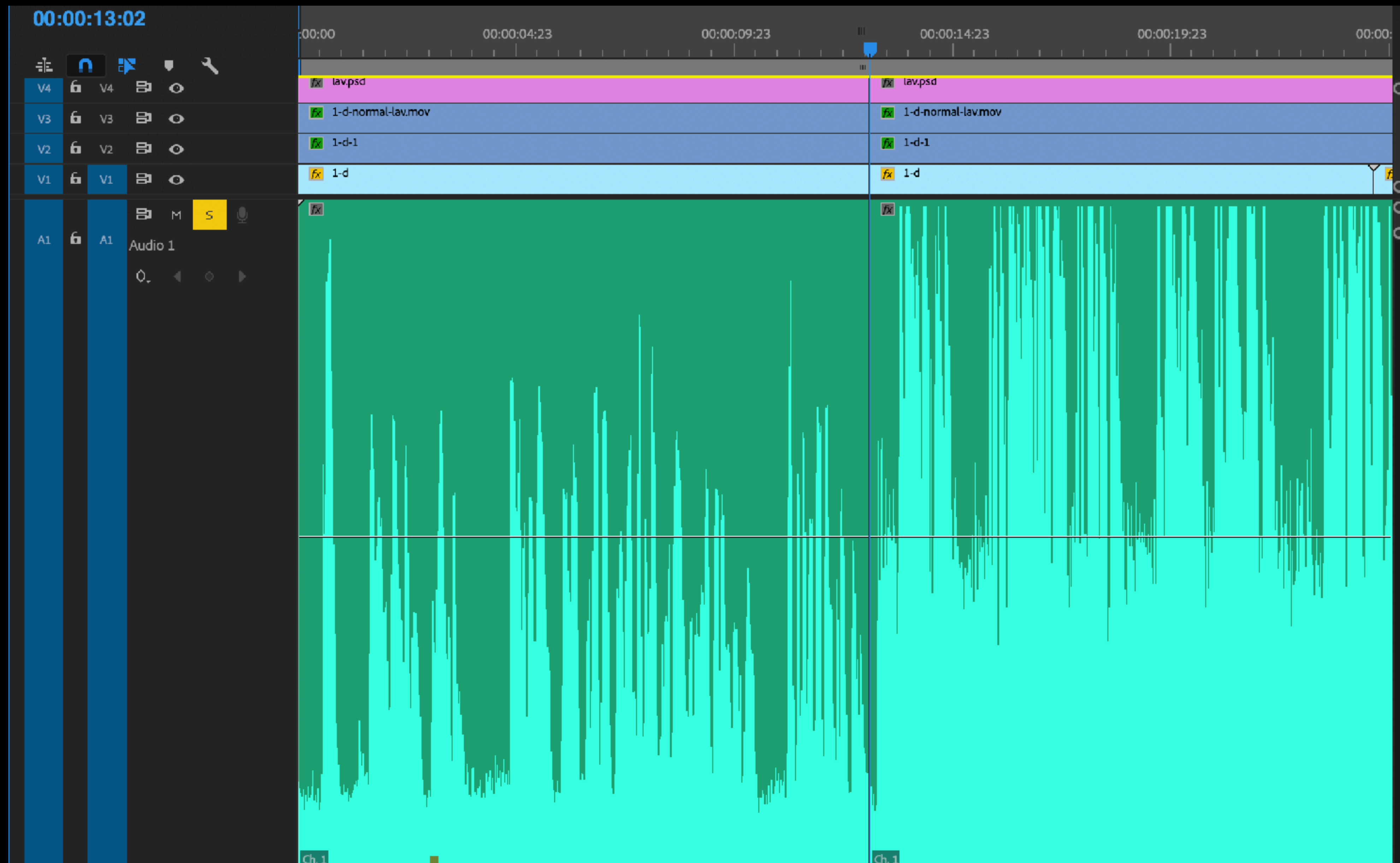
SIGNAL TO NOISE RATIO



SIGNAL TO NOISE RATIO



AUDIO WAVEFORMS



ENVIRONMENTAL TONE!!

- Otherwise known as room tone.
- All environments have some base level of sound.
 - Air-conditioning, traffic, wind rustling leaves.
- By recording just the ambient sounds you can smooth over inconsistencies or empty gaps in takes by bedding the tone under the dialogue and sound design.

AUDIO HARDWARE

CABLES AND CONNECTORS

1/4" TRS



XLR

CABLES AND CONNECTORS

1/8" TRS



XLR

DSLRs & AUDIO



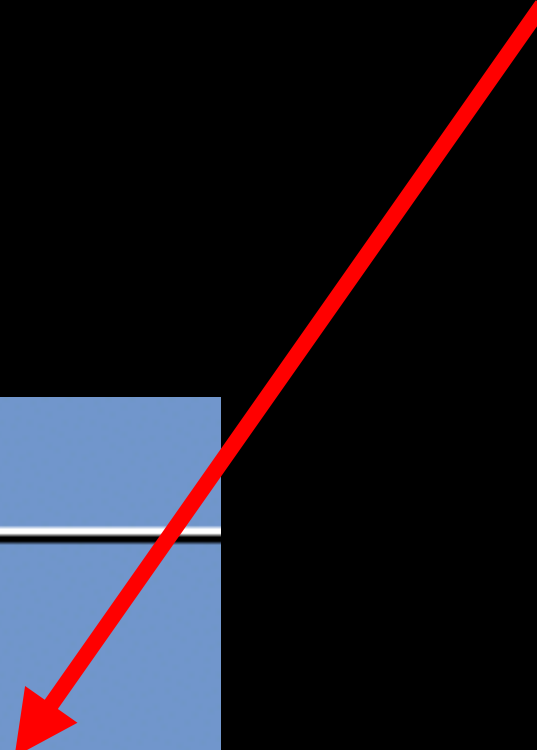
INTERNAL RECORDING VS EXTERNAL



SLATING AUDIO AND VIDEO

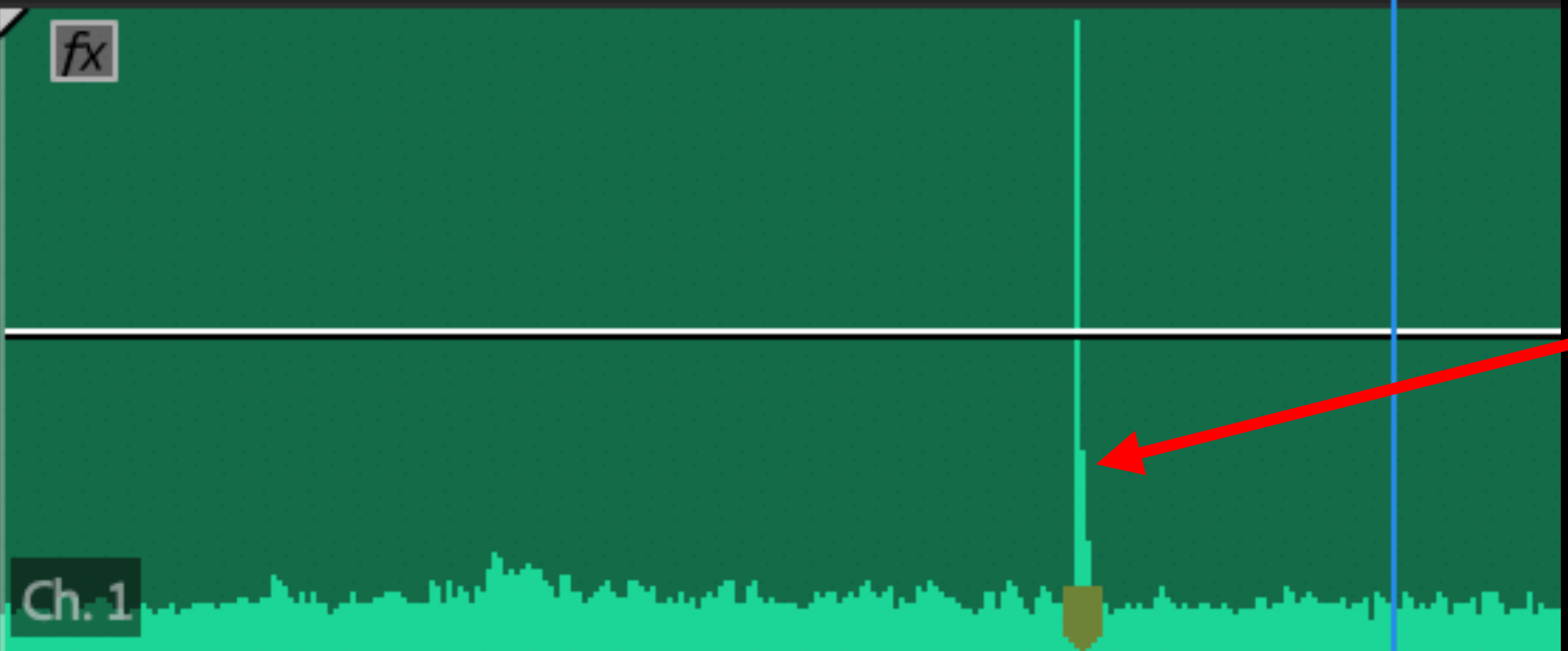


Slate visually closed



V1 Video 1

A1 Audio 1



Audio peak of slate closing (external recorder)

SYNC'ING SOUND, MODERN APPROACH



Woowave DreamSync (iMovie)



PluralEyes (FCP, Premiere)*
these also have this feature built in

**FAST,
ACCUR
AUTOM**

With a touch of a s
analyzes the audio
audio devices and
seconds. No claps
needed.

SYNCHRONIZE

ZOOM RECORDER

4 channel audio recorder



PHONE RECORDER



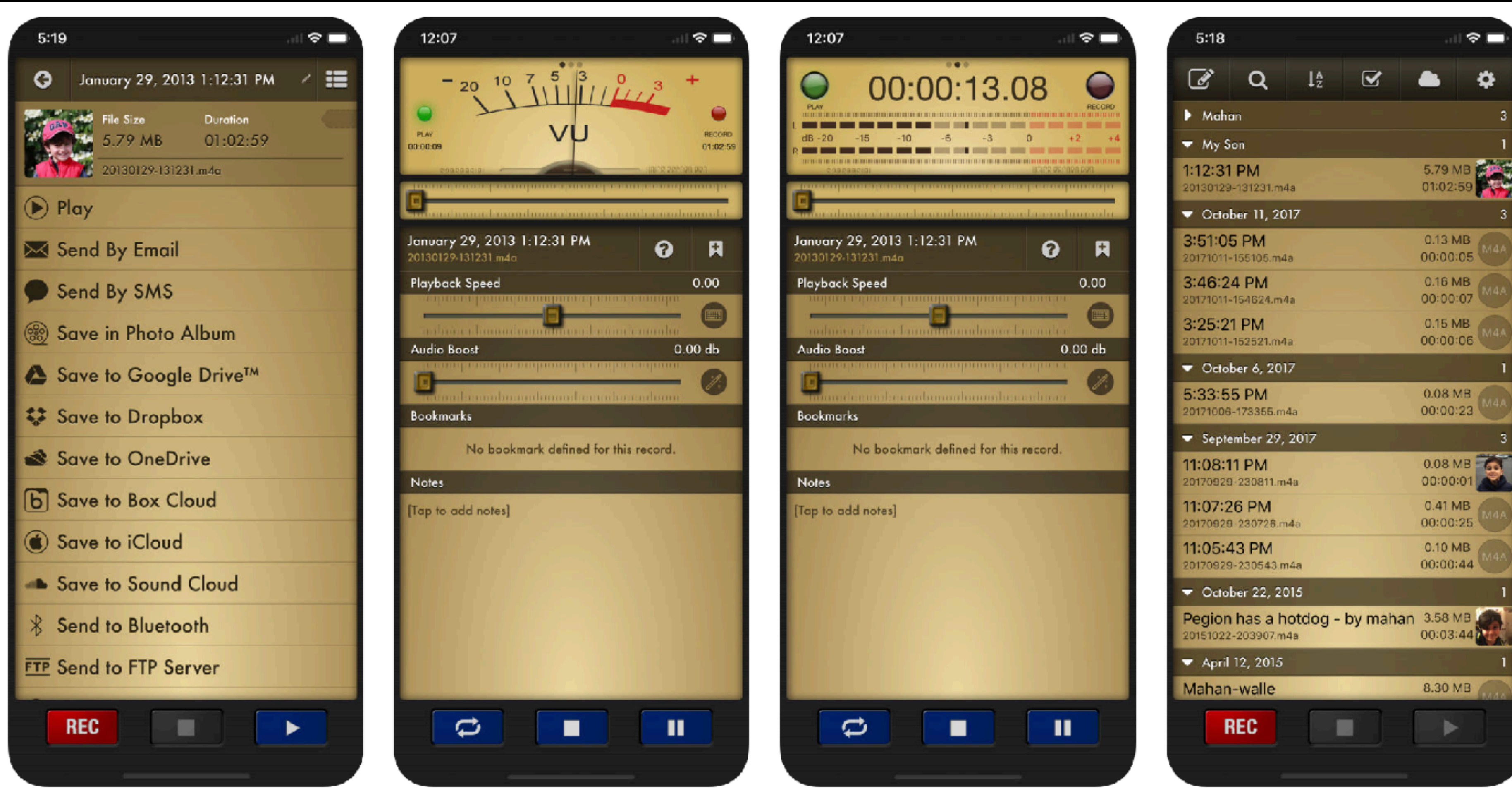
Voice Record Pro 4+

Full Featured Audio Recorder
Dayana Networks Ltd

#144 in Utilities

★★★★★ 1.3K Ratings

Free • Offers In-App Purchases



BREAK

AUDIO POST-PRODUCTION

SOUND IN EDITING

- foley
- adr
- sound design



LIFECYCLE OF AUDIO IN A PROJECT

- Recording
- Picture Editing, rough audio placeholders
- Picture Lock
- Sound Editing
- Finished Product

AUDIO LAYERS IN SOUND DESIGN

- Music
- Ambience / Atmospheric
- Sound Effects
- Dialogue







RESOURCES

- https://offers.adobe.com/en/na/audition/offers/audition_dlc/AdobeAuditionDLCsfx.html ←—— !!!!
- <https://www.youtube.com/audiolibrary/soundeffects>
- freesound.org
- <http://www.audiomicro.com/free-sound-effects/>

SOUND IN SHOTCUT

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