

Web Audio Codelab #3

# **AudioParam and Modulation**

Music 220A Summer 2021

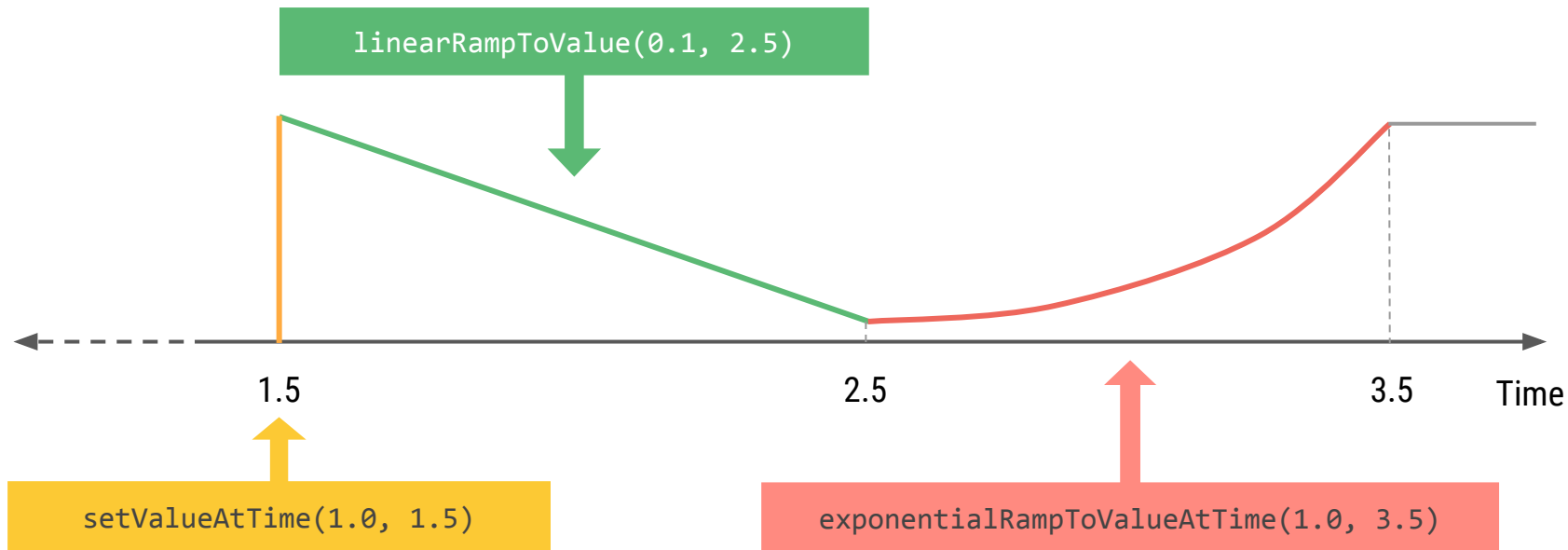
# AudioParam

- Member of AudioNode
- Automation methods
  - `AudioParam.setValueAtTime(value, startTime)`
  - `AudioParam.linearRampToValueAtTime(value, endTime)`
  - `AudioParam.exponentialRampToValueAtTime(value, endTime)`
  - `AudioParam.setTargetAtTime(value, startTime, timeConstant)`

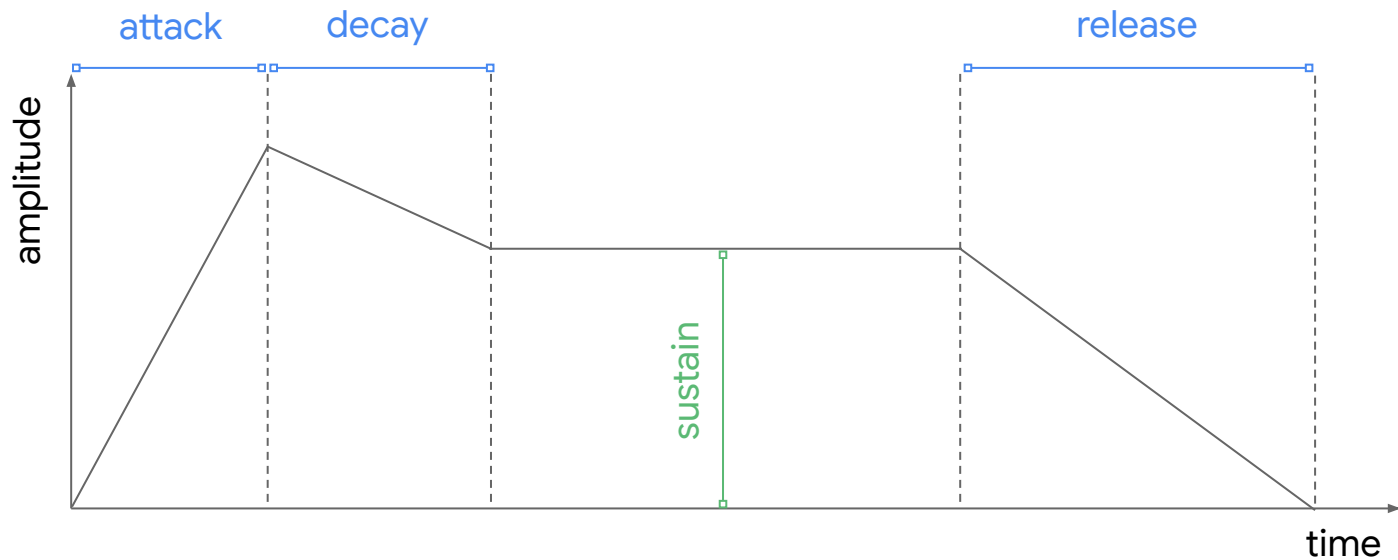
```
const amp = new GainNode(context);

amp.gain.setValueAtTime(1.0, 1.5);
amp.gain.linearRampToValue(0.1, 2.5);
amp.gain.exponentialRampToValueAtTime(1.0, 3.5);
```

# AudioParam



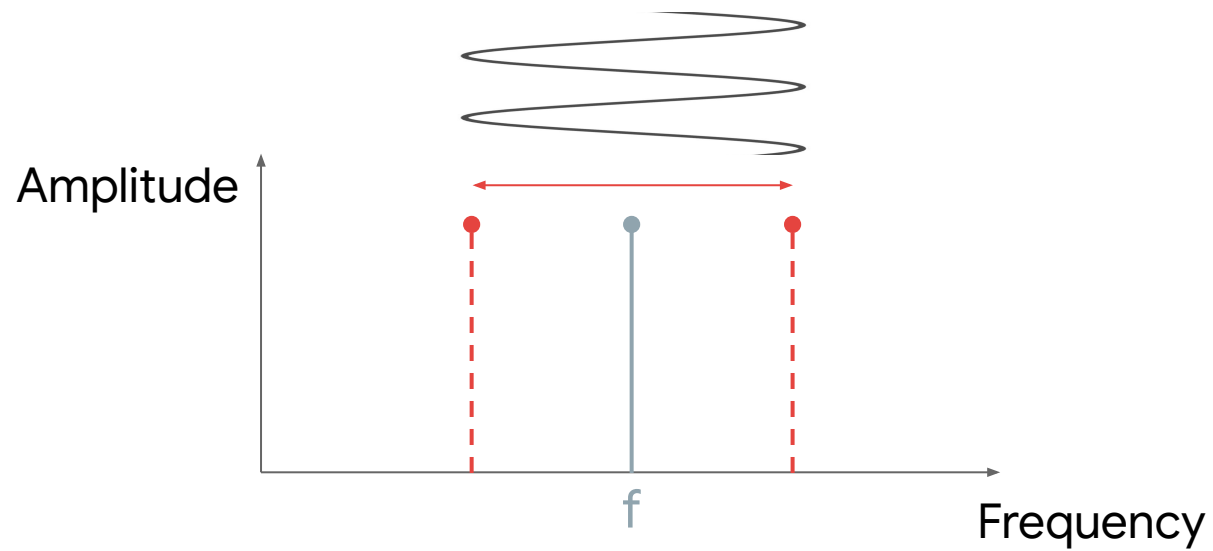
# ADSR Envelope



```
const amp = new GainNode(context);
const now = context.currentTime;

amp.gain.setValueAtTime(0.0, now);
amp.gain.linearRampToValueAtTime(1.0, now + attack);
amp.gain.linearRampToValueAtTime(sustain, now + attack + decay);
amp.gain.linearRampToValueAtTime(0.0, now + attack + decay + release);
```

# Vibrato



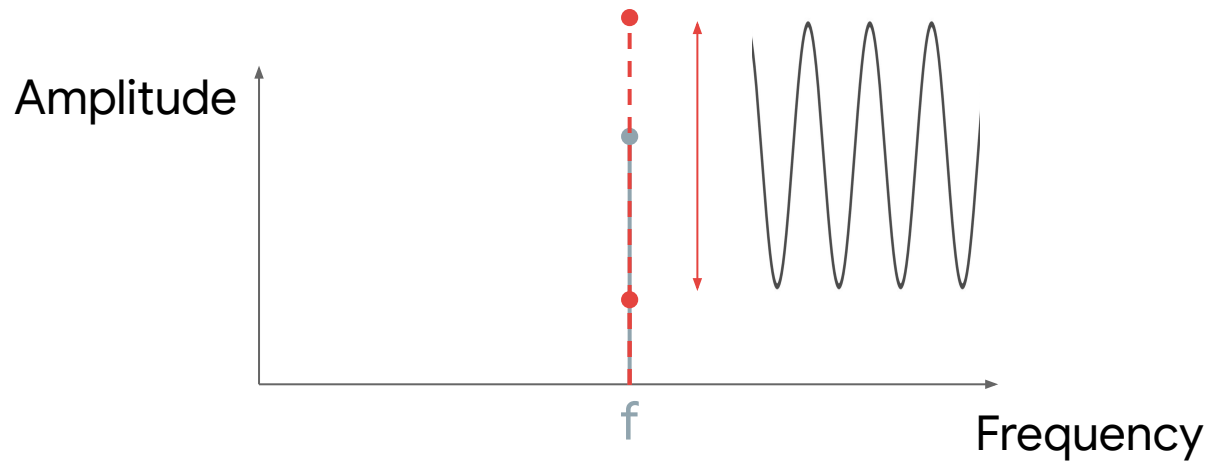
```
lfo = new OscillatorNode(context);  
depth = new GainNode(context);  
osc = new OscillatorNode(context);
```

```
lfo.frequency.value = 2;  
depth.gain.value = 100;
```

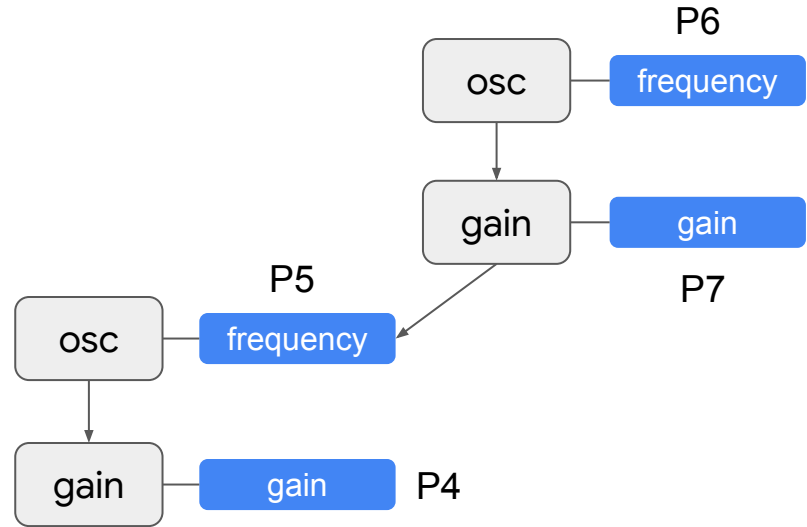
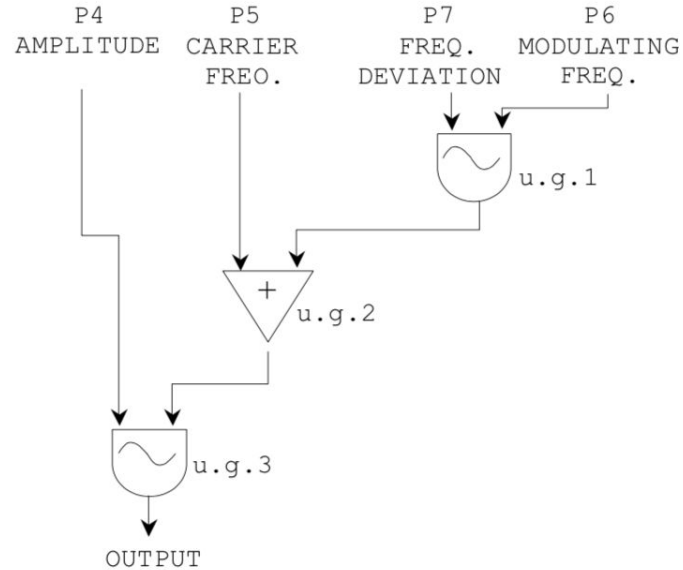
```
lfo.connect(depth)  
    .connect(osc.frequency);  
osc.connect(context.destination);  
lfo.start();  
osc.start();
```



# Tremolo



# Simple FM



```
const mod = new OscillatorNode(context);
const dev = new GainNode(context);
const car = new OscillatorNode(context);
const amp = new GainNode(context);

mod.connect(dev).connect(car.frequency);
car.connect(amp).connect(context.destination);
```

```
const modIndex = 1;
mod.frequency.value = 100;
dev.gain.value = mod.frequency.value * modIndex;
car.frequency.value = 100;
amp.gain.value = 0.5;
```

Tutorial:

# **AudioParam**

Examples:

# Modulation

[ADSR Envelope](#)

[Vibrato and Tremolo](#)

[FM](#)

[Modulation example codes](#)

[Live coding](#)

[Web Audio DX7](#)