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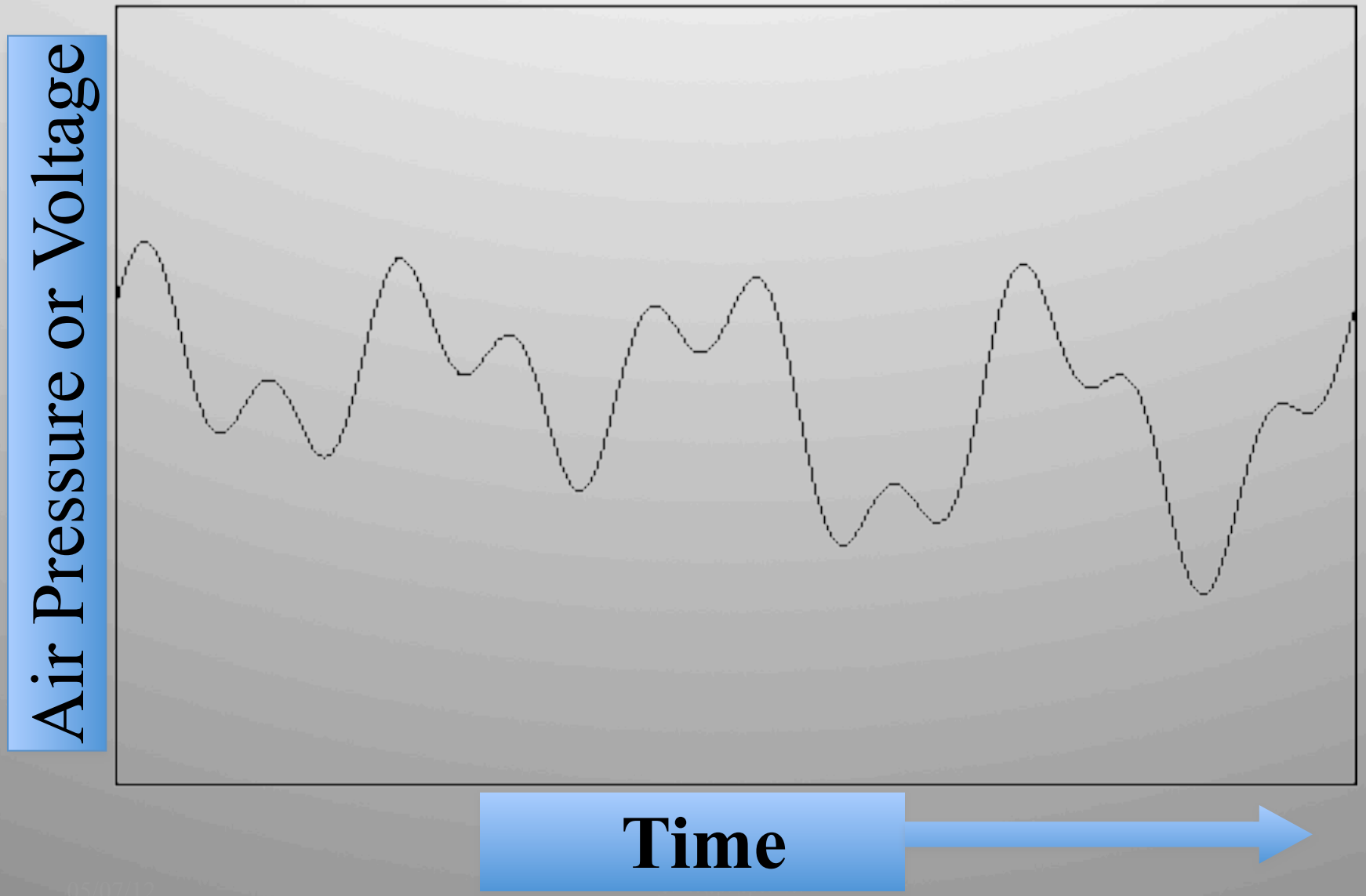
Welcome to Audio Processing for Voice-Over

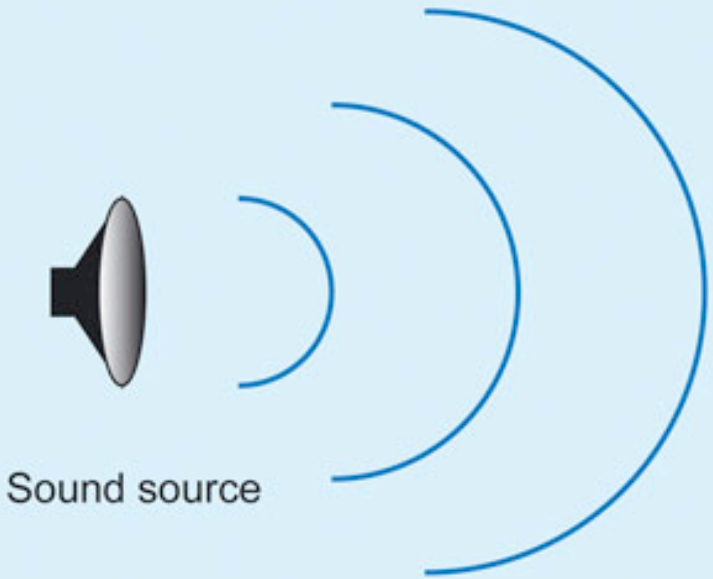
De-Mystified

Good Morning!
In this session we will discuss and demonstrate

- EQ Equalization
- Compression
- Noise Gates
- Normalizing
- Mastering

An Audio Signal





The signal represented as a stream of digits

0 1 1 0 1 0 0 1
1 1 0 1 1 1 0 0
0 1 0 0 1 1 0 0
0 0 1 1 0 1 0 1

Pressure variation represented as an analogue voltage

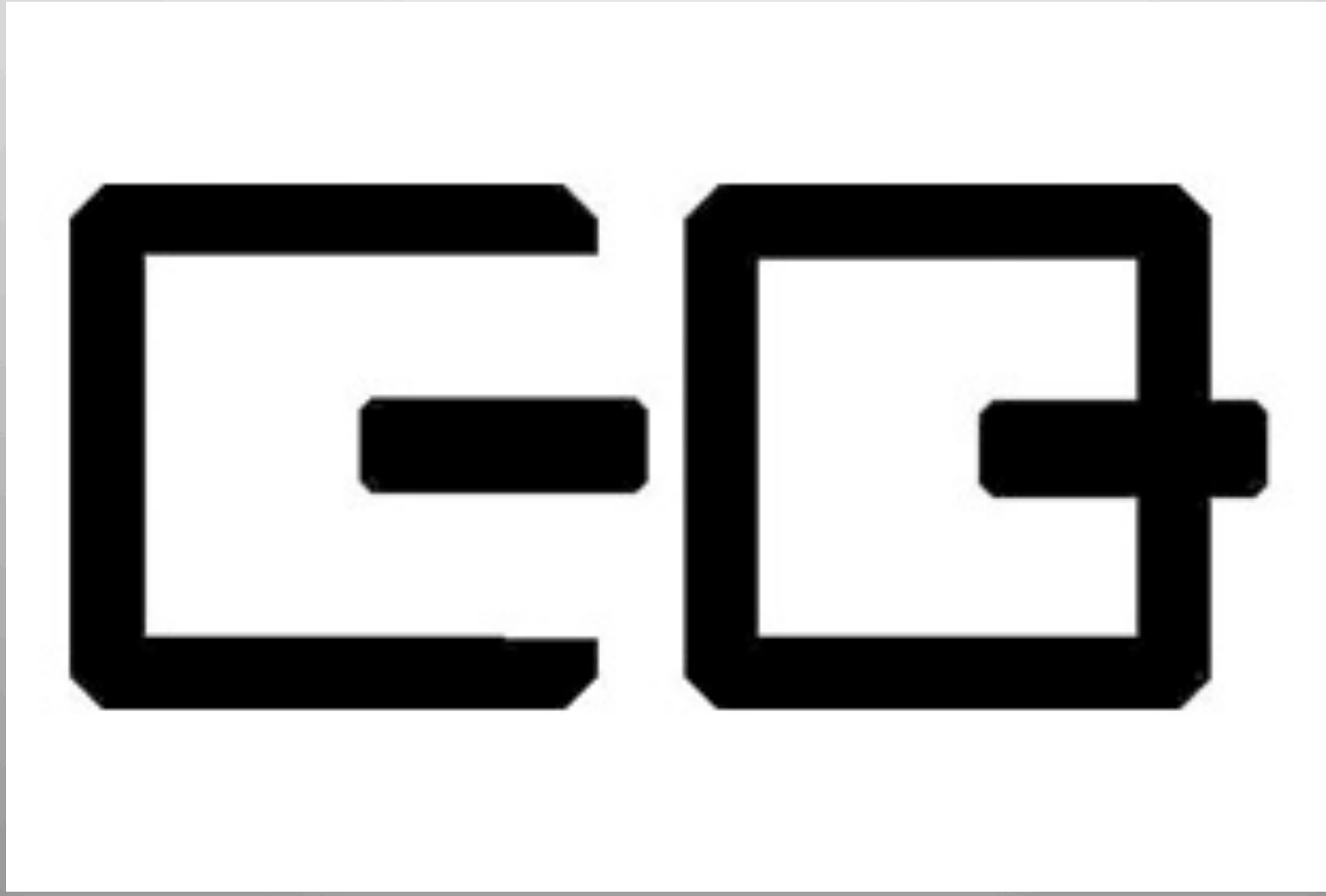
Sampling the analogue signal

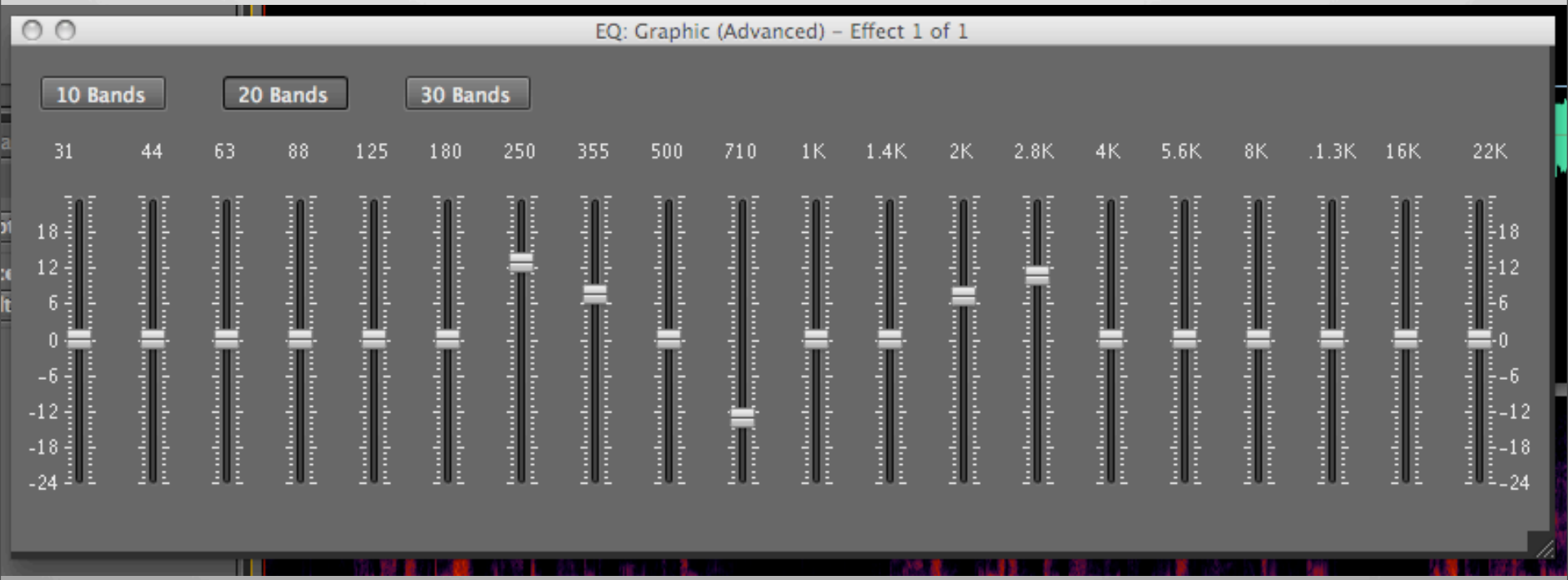
Another important term is the signal-to-noise ratio (SNR). In analog systems, this means the ratio of the nominal signal to the noise floor, where “line level” is the nominal operating level. On professional equipment, the nominal level is usually 1.228 Vrms, which translates to +4 dBu. The headroom is the difference between nominal line level and the peak level where signal distortion starts to occur. The definition of SNR is a bit different in digital systems, where it is defined as the dynamic range.

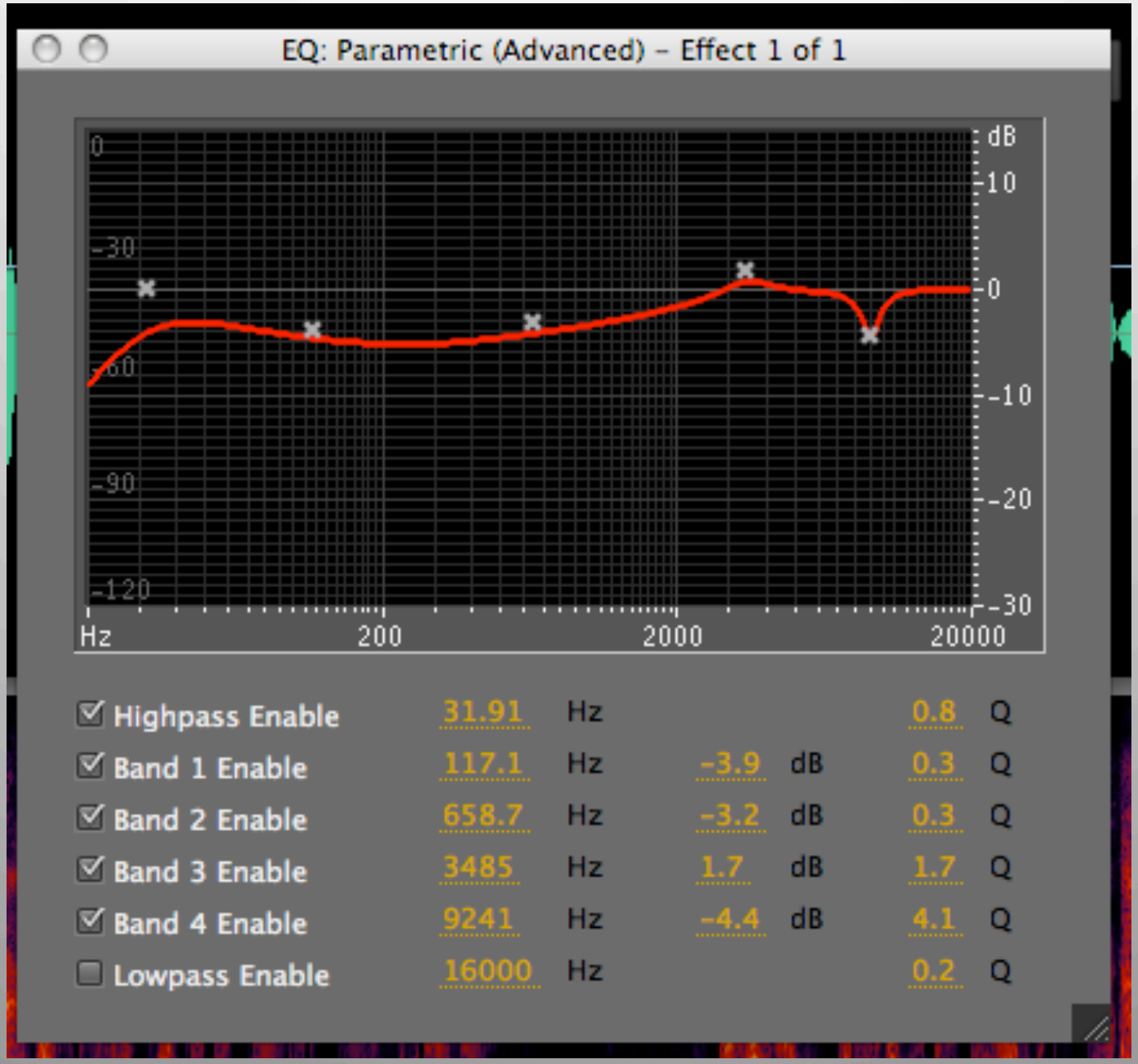
Front-End vs. Post

- We try to encourage people to record dry and process in post.
- It's Non-Destructive. It can be undone.
- ONCE YOU RECORD WITH FRONT END PROCESSING, ITS THERE FOREVER!

Equalization




EQ: Graphic (Advanced) – Effect 1 of 1
10 Bands
20 Bands
30 Bands
31
44
63
88
125
180
250
355
500
710
1K
1.4K
2K
2.8K
4K
5.6K
8K
.1.3K
16K
22K
18
12
6
0
-6
-12
-18
-24

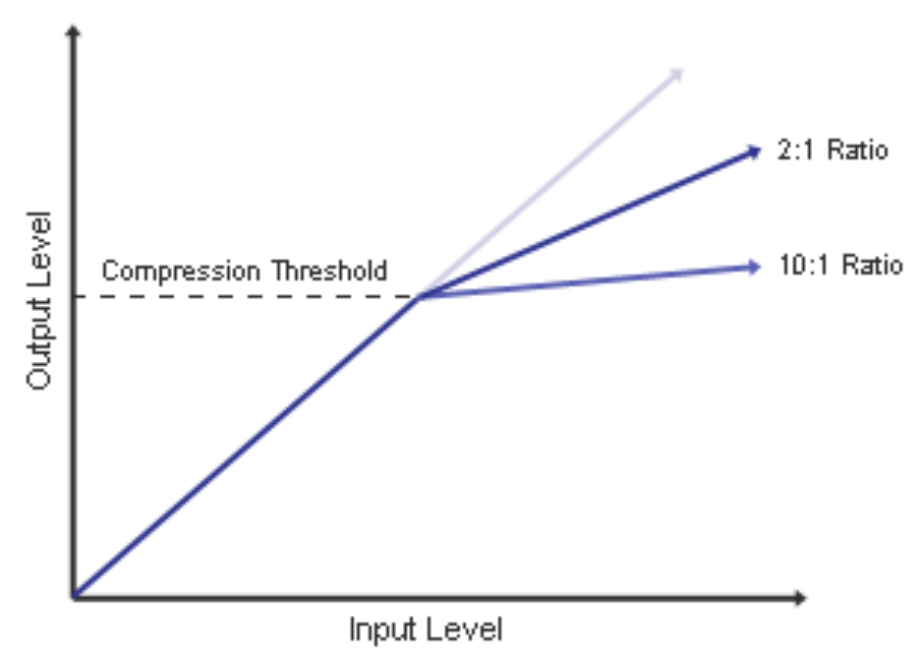

EQ: Parametric (Advanced) – Effect 1 of 1
0
-30
-60
-90
-120
dB
10
0
-10
-20
-30
Hz
200
2000
20000
Highpass Enable 31.91 Hz 0.8 Q
Band 1 Enable 117.1 Hz -3.9 dB 0.3 Q
Band 2 Enable 658.7 Hz -3.2 dB 0.3 Q
Band 3 Enable 3485 Hz 1.7 dB 1.7 Q
Band 4 Enable 9241 Hz -4.4 dB 4.1 Q
Lowpass Enable 16000 Hz 0.2 Q


Visual EQ
On
Manual
Bass
Low Mid
High Mid
Treble
20
50
100
200
500
1K
2K
5K
10K
20K
Details
Analyzer
118Hz
-9.0dB
265Hz
+5.0dB
1280Hz
+4.0dB
890Hz
+2.0dB

COMPRESSION

Why do we do this, and when?

Audio compression is a method of reducing the dynamic range of a signal. All signal levels above the specified threshold are reduced by the specified ratio. The example below shows how a signal level is reduced by 2:1 (the output level above the threshold is halved) and 10:1 (severe compression).



The parameters:

There are five basic controls that shape the way a compressor manipulates a sound input.

Threshold

Sets the decibel (dB) threshold to the level at which the compressor begins to work.

Ratio

This sets the amount of compression, in dB, applied to a signal once it violates your pre-set threshold. A ratio of 4:1 will output 1 dB for every 4 dB of input signal that *exceeds your targeted threshold*

RATIO & THRESHOLD EXAMPLE

If you set a threshold of 10 dB and a ratio of 10:1, a raw 20 dB signal would effectively be squashed down to 11 dB.

The parameters:

Attack

The time, measured in milliseconds (ms), it takes for the compressor to reach its maximum level on the sound.

The parameters:

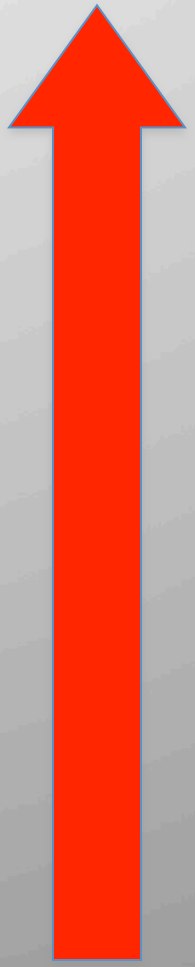
Release

Controls how long (ms) it takes to release a signal from the compressor once it's dipped below your specified threshold.

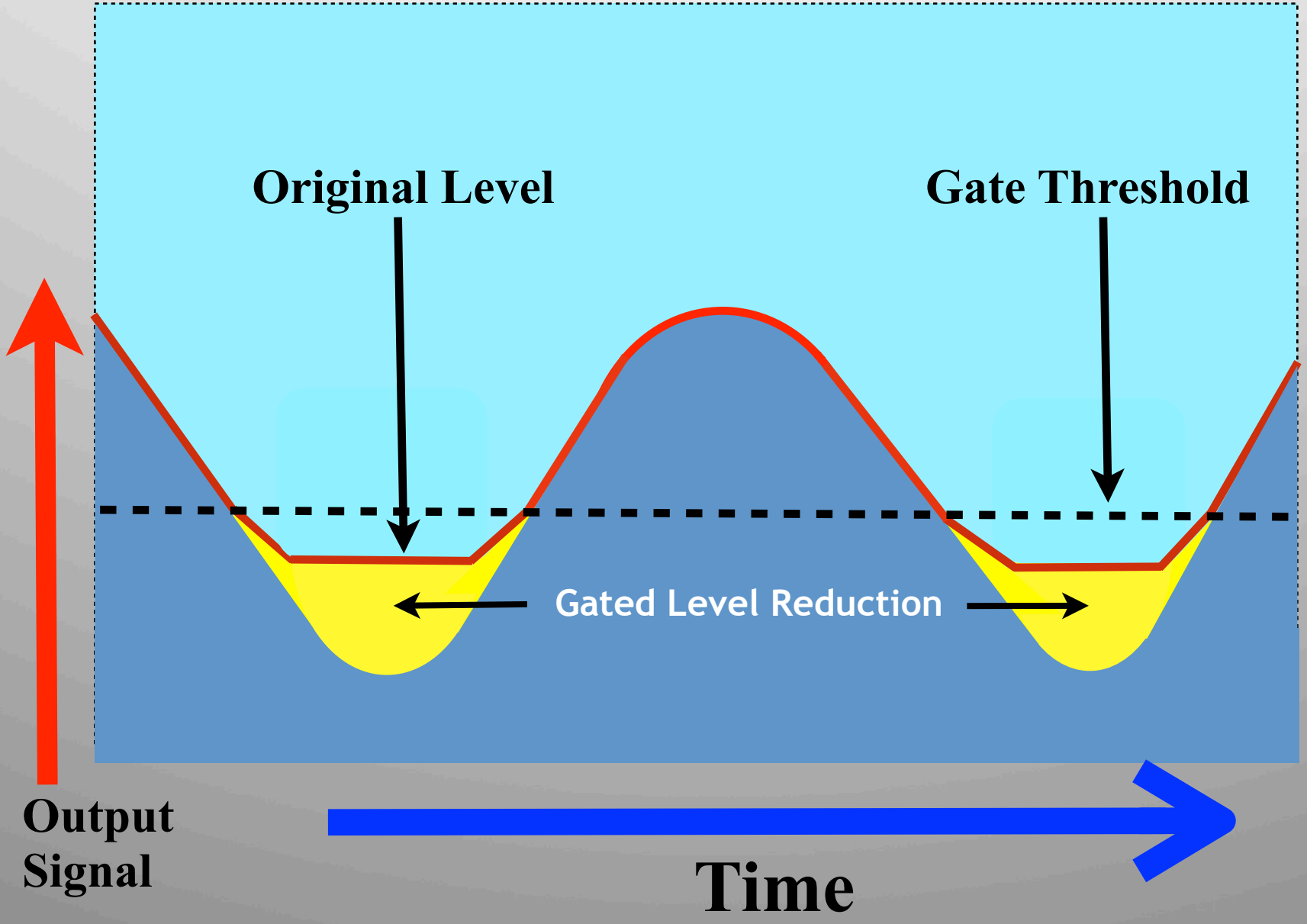
The parameters:

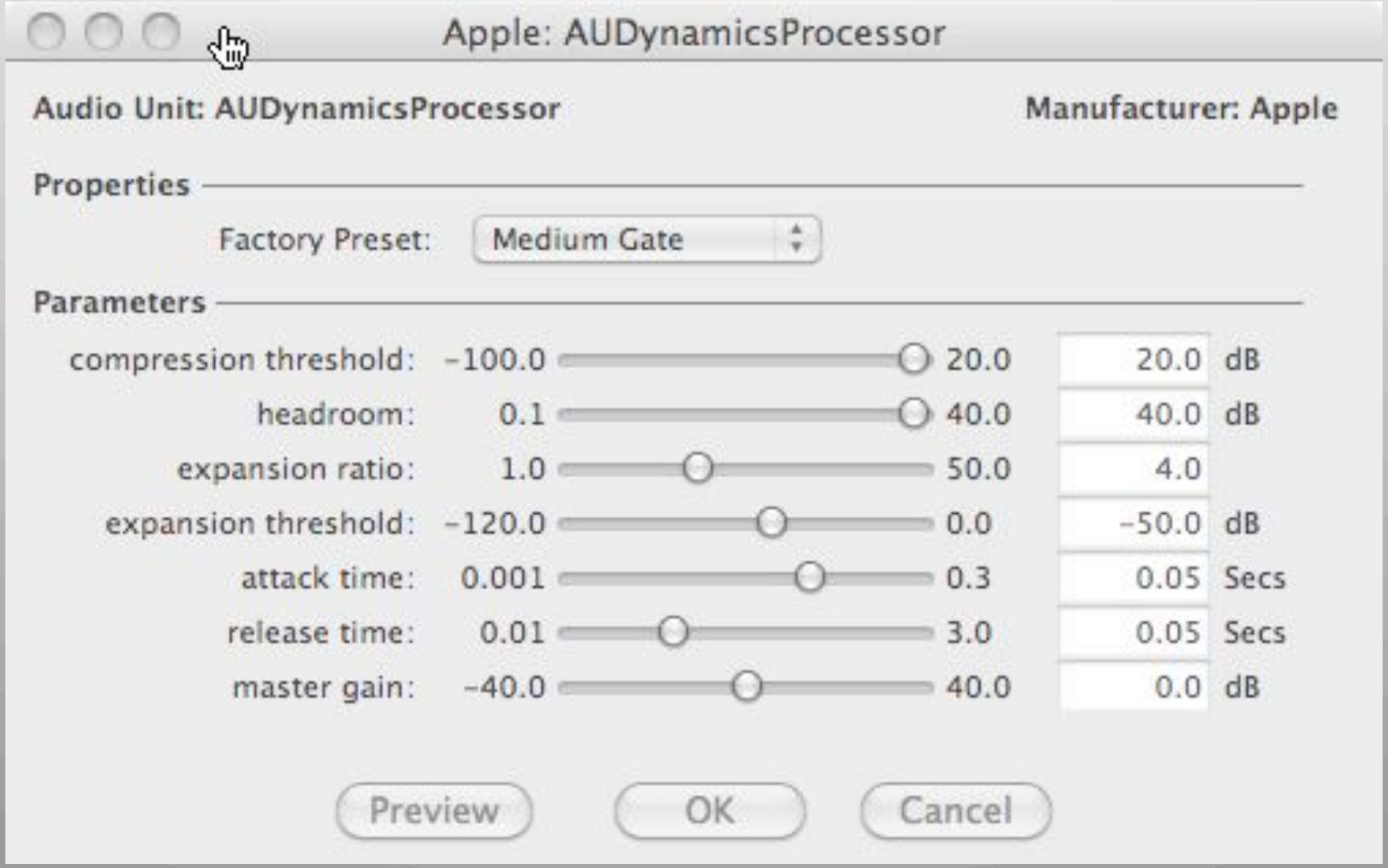
Output

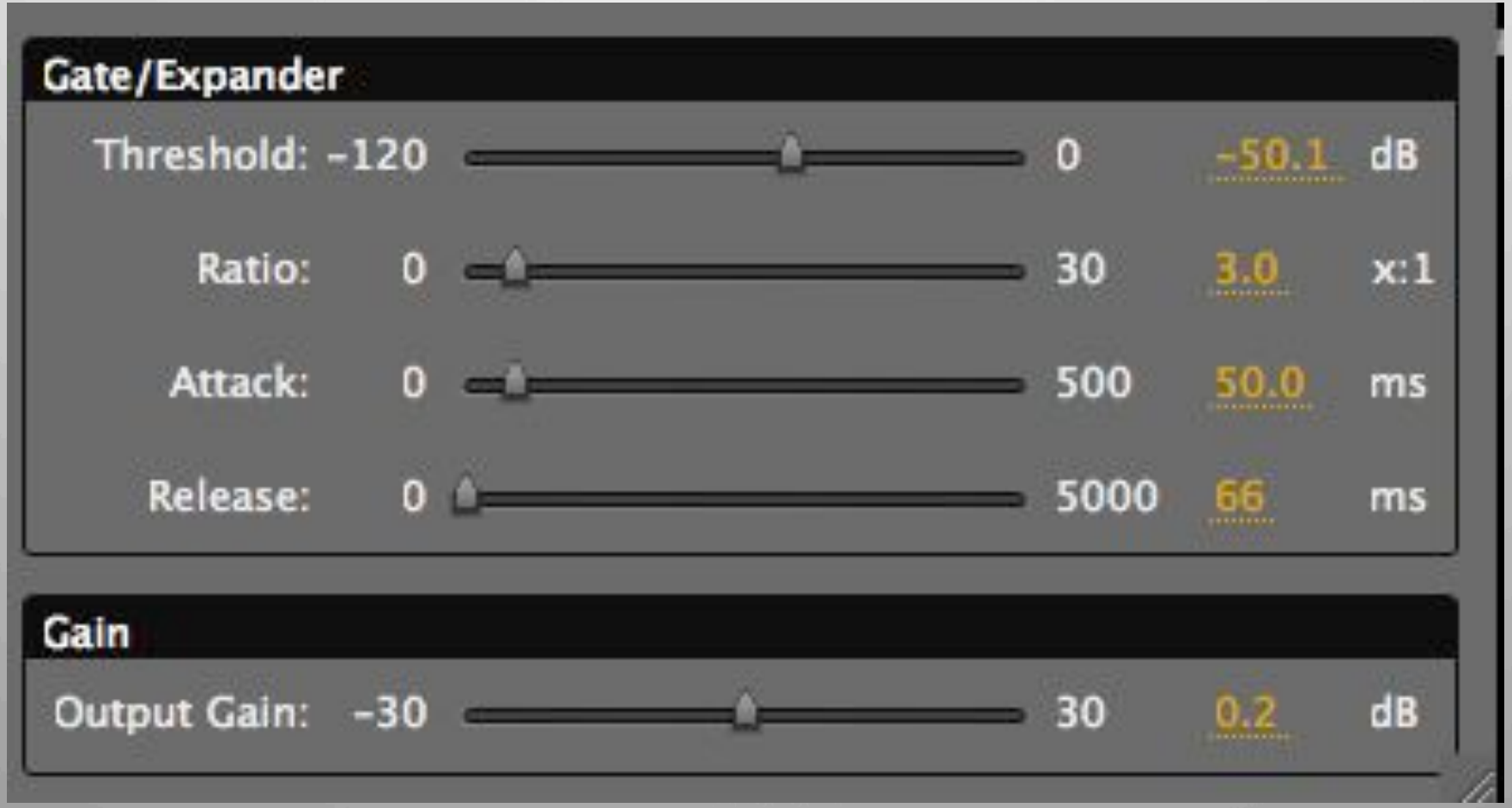
Sets the overall output level of the effect (dB). This can be useful to whack up the output level again after its been reduced from applying compression to a signal - This is otherwise commonly known as *make-up gain*.

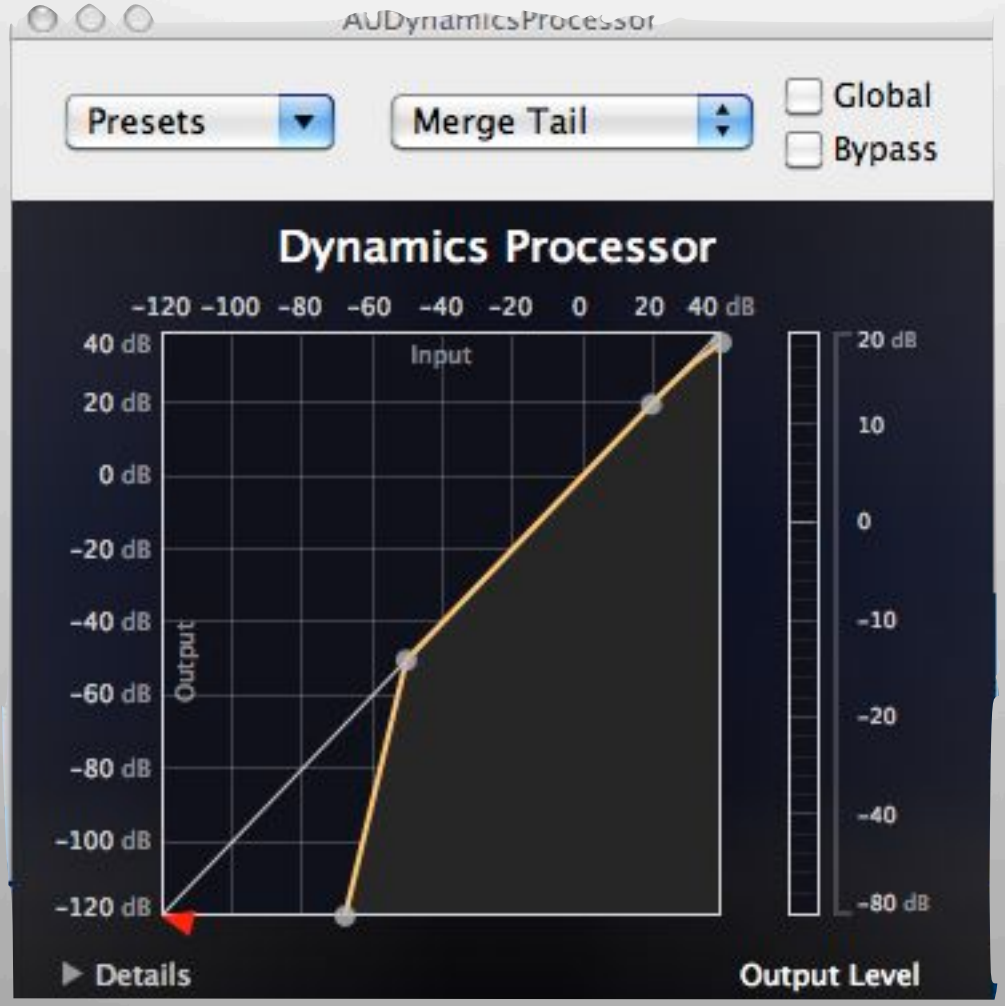


Noise Gate


Original Level
Gate Threshold
Gated Level Reduction
Output Signal
Time


Apple: AUDynamicsProcessor
Audio Unit: AUDynamicsProcessor
Manufacturer: Apple
Properties
Factory Preset:
Medium Gate
Parameters
compression threshold: -100.0 20.0 20.0 dB
headroom: 0.1 40.0 40.0 dB
expansion ratio: 1.0 50.0 4.0
expansion threshold: -120.0 0.0 -50.0 dB
attack time: 0.001 0.3 0.05 Secs
release time: 0.01 3.0 0.05 Secs
master gain: -40.0 40.0 0.0 dB
Preview
OK
Cancel

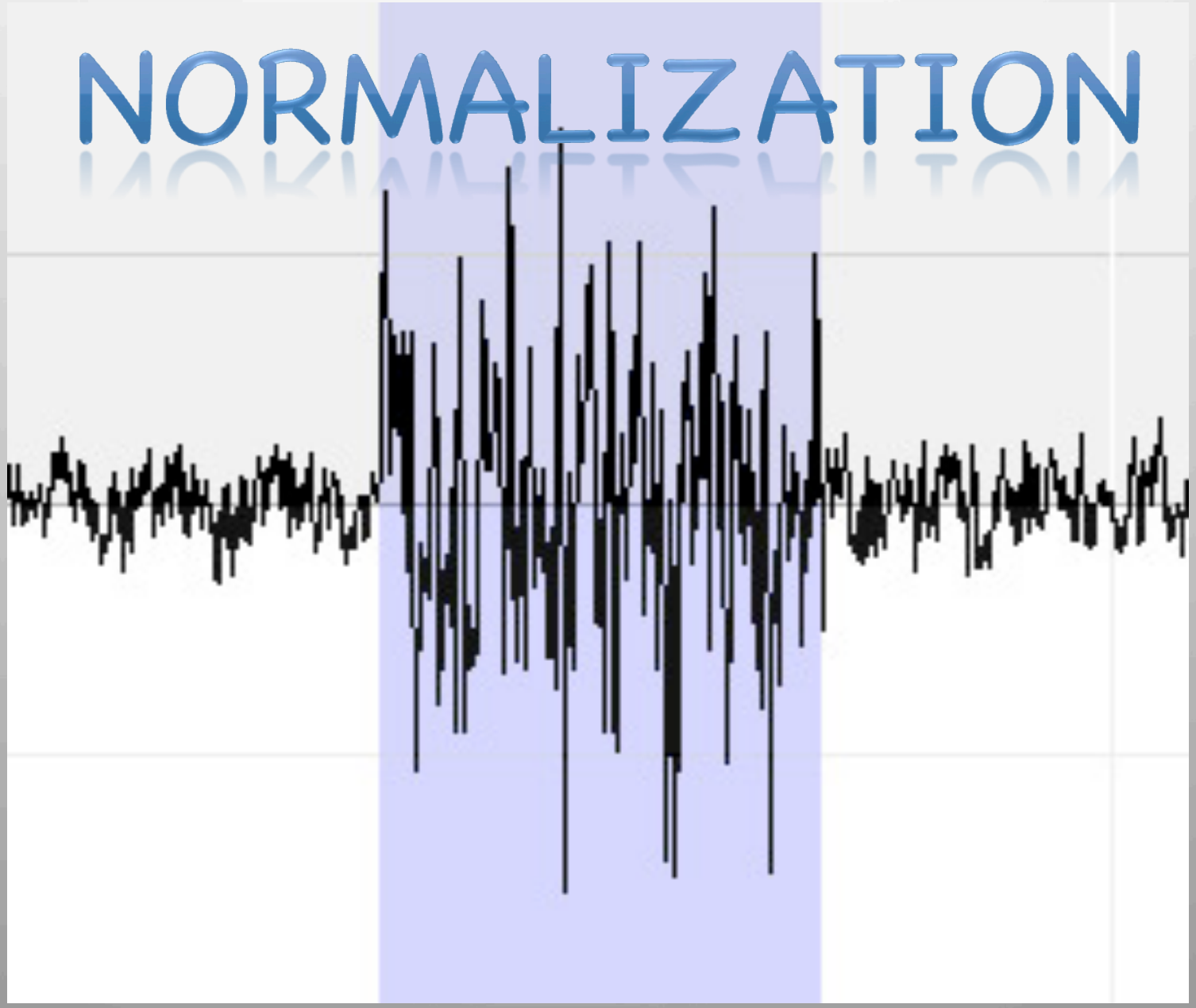

Gate/Expander
Threshold: -120 0 -50.1 dB
Ratio: 0 30 3.0 x:1
Attack: 0 500 50.0 ms
Release: 0 5000 66 ms
Gain
Output Gain: -30 30 0.2 dB


AUDynamicsProcessor
Presets
Merge Tail
Global
Bypass
Dynamics Processor
-120 -100 -80 -60 -40 -20 0 20 40 dB
40 dB
20 dB
0 dB
-20 dB
-40 dB
-60 dB
-80 dB
-100 dB
-120 dB
Input
Output
20 dB
10
0
-10
-20
-40
-80 dB
Details
Output Level

Adjusting In Real Time

- You can listen to the effect without changing the file.
- You can make adjustments while listening
- Some software won't let you do that, like Audacity. You can hear a preview.

NORMALIZATION



The Biggest Mistake In Audio Processing

- Normalizing makes things louder
- It makes ***everything*** louder
- ***Do not*** use normalizing to boost a low initial signal.
- Do all other process first, then Normalize IF YOU HAVE TO.
- Normalization is a minor adjustment, not a huge one.