
K-Meter

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Implementation of a K-System meter according to Bob Katz' specifications

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FLAC-compressed wave file (44.1 kHz, 16 bit, stereo)

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Please verify phase correlation meter programmatically.

00:00.000 - 00:02.000 silence

00:02.000 - 00:22.000 two triangular waves (linear phase sweep)
 left channel: 441.0 Hz, -12 dB FS peak
 right channel: 441.1 Hz, -12 dB FS peak

 [phase correlation meter should oscillate **twice**
 from approximately +1.00 to -1.00 and back]

00:22.000 - 00:24.000 silence

00:24.000 - 00:27.000 two triangular waves (441 Hz, -12 dB FS peak)
 left channel: 0 samples delay
 right channel: 0 samples delay

 [phase correlation meter should read +1.00]

00:27.000 - 00:29.000 silence

00:29.000 - 00:32.000 two triangular waves (441 Hz, -12 dB FS peak)
 left channel: 0 samples delay
 right channel: 10 samples delay

 [phase correlation meter should read +0.79]

00:32.000 - 00:34.000 silence

00:34.000 - 00:37.000 two triangular waves (441 Hz, -12 dB FS peak)
 left channel: 0 samples delay
 right channel: 20 samples delay

 [phase correlation meter should read +0.30]

00:37.000 - 00:39.000 silence

00:39.000 - 00:42.000 two triangular waves (441 Hz, -12 dB FS peak)
left channel: 0 samples delay
right channel: 30 samples delay

[phase correlation meter should read -0.30]

00:42.000 - 00:44.000 silence

00:44.000 - 00:47.000 two triangular waves (441 Hz, -12 dB FS peak)
left channel: 0 samples delay
right channel: 40 samples delay

[phase correlation meter should read -0.79]

00:47.000 - 00:49.000 silence

00:49.000 - 00:52.000 two triangular waves (441 Hz, -12 dB FS peak)
left channel: 0 samples delay
right channel: 50 samples delay

[phase correlation meter should read -1.00]

00:52.000 - 00:54.000 silence

Validation settings

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File: phase_correlation_meter.flac
Host SR: 44 100 Hz
Channel: All
Display: [] Peak meter level
[] Average meter level
[] Maximum peak level
[] Stereo meter value
[x] Phase correlation

Linear phase sweep

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left channel: (441.0 periods / second) * 20 seconds = 8820 periods
right channel: (441.1 periods / second) * 20 seconds = 8822 periods

difference: -----
2 periods

--> *phase correlation oscillates *twice* between +1 and -1 (but keep in mind that meter ballistics interfere with the sweep and thus lead to a range of approximately +0.98 to -0.98)*

--> *please keep in mind that while the phase sweep is linear, the corresponding phase correlation is *not* linear (see below)!*

Static phase shift

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Phase correlation has been calculated using the cross-correlation function "ccf" in R (see "phase_correlation_meter.R" in this folder).

period length = (44100 samples / second) / 441 Hz = 100 samples

0 samples delay / 100 samples = 0 % phase offset
--> *phase correlation: +1.00*

10 samples delay / 100 samples = 10 % phase offset
--> *phase correlation: +0.79*

20 samples delay / 100 samples = 20 % phase offset
--> *phase correlation: +0.30*

30 samples delay / 100 samples = 30 % phase offset
--> *phase correlation: -0.30*

40 samples delay / 100 samples = 40 % phase offset
--> *phase correlation: -0.79*

50 samples delay / 100 samples = 50 % phase offset
--> *phase correlation: -1.00*