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

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FLAC-compressed wave file (44.1 kHz, 16 bit)
============================================
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]
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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
===================
File:     phase_correlation_meter.flac
Host SR:  44 100 Hz
Channel:  All
Display:  [ ] Average meter level
          [ ] Peak meter level
          [ ] Maximum peak level
          [ ] Stereo meter value
          [x] Phase correlation


Linear phase sweep
==================
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)!
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Static phase shift
==================
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
```