

### EM\_trianglevoice (12/08/21)

- inlet 1: fundamental frequency (signal, 0-20,000)
- inlet 2 & argument 1: band-pass filter center frequency (signal, 0-20,000)
- inlet 3 & argument 2: band-pass filter width (signal, 1-50)

EM\_trianglevoice is an abstraction for the Pd clone object to generate a triangle wave. Each instance of the abstraction inside the clone object generates a harmonic component. A band-pass filter is implemented based on the Gaussian function, which dynamically attenuates the relative amplitude of each harmonic component. A low-pass filter with a cutoff frequency of 100 Hz is used inside each abstraction to smooth amplitude changes.

The Gaussian function is defined as:

$$f(x) = a \cdot \exp\left(-\frac{(x - b)^2}{2c^2}\right)$$

where  $a$  is the height of the curve's peak,  $b$  is the position of the center of the peak, and  $c$  controls the width of the curve.

