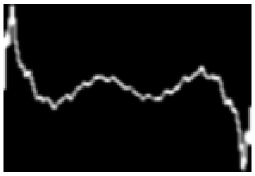
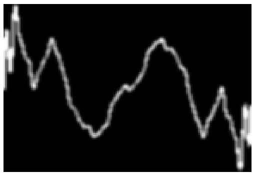


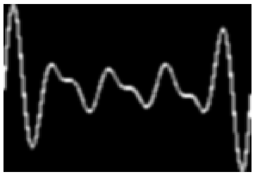
Add - BinAdd-Arth

Binary Additive Arithmetic Series. These waveforms are created by forming 8 partial "bins" or containers which can either be on (1) or off (0). All possible unique values are provided, which is equal to 2^8 = 256 possibilities. This is equivalent to 8bit values hence the name Binary Additive. The partial bin cutoffs in this group follow an arithmetic series (1, 3, 6, 10, 15, 21, 28, 36, 45...) and partial amplitude is 1/frequency (i.e. partial 2 has an amplitude of 1/2). This method is designed to cover a large range of possible low-to-medium brightness timbres and the waveforms make great oscillators for modeling natural and biological sounds.



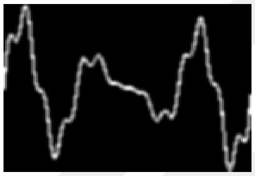
Add - BinAdd-Fib

Binary Additive Fibonacci Series. The partial bin cutoffs in this group follow the Fibonacci series (1, 2, 3, 5, 8, 13, 21, 34, 55...) and partial amplitude is 1/frequency (i.e. partial 2 has an amplitude of 1/2). This method is designed to cover a large range of possible low-to-medium brightness timbres and the waveforms make great oscillators for modeling natural and biological sound sources.



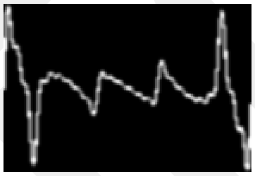
Add - BinAdd-Int_1

Binary Additive Integer 1. In this group each bin simply contains 1 partial starting from 1 and ending at 8. This group therefore offers all possible on/off combinations of the first 8 partials. These are very smooth waveforms that are good to use in various modulation and distortion synthesis methods which create additional harmonics based on the interaction of two or more waveforms.



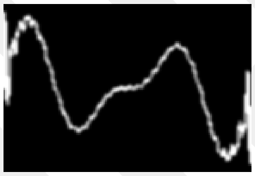
Add - BinAdd-Int_2

Binary Additive Integer 2 This group is the same as the "Add - BinAdd-Int_1" group, but in this group has two partials per bin (1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16). Partial amplitude is again 1/frequency (i.e. partial 2 has an amplitude of 1/2). This group provides a good survey of possible timbres created by using up to the 16th partial. Timbres are again fairly smooth and mellow and are well suited to model natural and biological sounds. Modulation and distortion synthesis techniques work well with these.



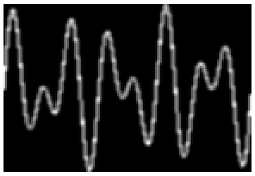
Add - BinAdd-Int_4

Binary Additive Integer 2 This group is the same as the "Add - BinAdd-Int_1" group, but in this group has four partials per bin (1-4, 5-8, 9-12, 13-16, 17-20, 21-24, 25-28, 29-32). Partial amplitude is again 1/frequency (i.e. partial 2 has an amplitude of 1/2). This group provides a good survey of possible timbres created by using up to the 32nd partial. Timbres start to become a little brighter but are still well suited to model natural and biological sounds. Modulation and distortion synthesis techniques work well with these.



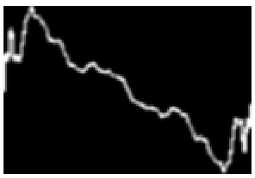
Add - BinAdd-Oct

Binary Additive Octaves. The partial bin cutoffs in this group follow powers of two or octaves (1, 2, 4, 8, 16, 32, 64, 128, 256...) and partial amplitude is 1/frequency (i.e. partial 2 has an amplitude of 1/2). This method is designed to cover a large range of possible low-to-high brightness timbres and cover a pretty drastic range of possibilities including some novel "hollow" and "nasal" timbres. These are good to use in subtractive synthesizers with more traditional enveloped filters.



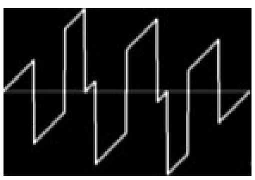
Add - BinAdd-Sine

Binary Additive Sine. This group is the same as the "Add - BinAdd-Int_1" group, but in this group all partial weights are fixed to full scale instead of 1/F. This adds significantly more volume to the higher frequency harmonics. The resulting waveform oscillates more drastically in comparison which can sometimes be more useful for LFO purposes.



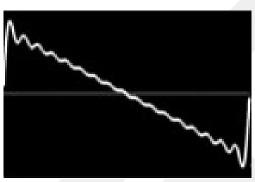
Add - BinAdd-Sqrs

Binary Additive Squares. The partial bin cutoffs in this group follow squares (1, 4, 9, 16, 25, 36, 49, 64, 81...) and partial amplitude is 1/frequency (i.e. partial 2 has an amplitude of 1/2). This method is designed to cover a large range of possible low-to-medium-high brightness timbres and cover a pretty wide range of possibilities including some novel vocal-like timbres. These are good to use in subtractive synthesizers with more traditional enveloped filters.



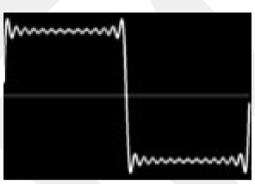
Add - NonSine

These waveforms are created by adding together two or more Saw or Square waveforms at various frequency ratios. These are excellent to use as starting points for designing custom lead synths where a simple Saw or Square would normally be used. Some of these also make use of ratios that creative musical intervals like 5ths, 4ths, etc., as is common in some classic synths. Perfect for electro, trance, and similar styles of music when combined with simple filter envelopes.



Add - Partials Range All

Waveforms created by adding together all sequential partials in a given range using scaled amplitude as in above. This effectively produces a band-limited saw wave, where the more partials that are used, the closer to a perfect saw the wave will become. These can be useful to perfectly eliminate all aliasing for high frequency synths, and to produce intentionally dull saw-like timbres.

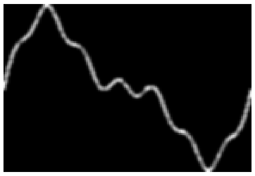


Add - Partials Range Odd

Waveforms created by adding together every other (odd) sequential partials in a given range using scaled amplitude as in above. This effectively produces a band-limited square wave, where the more partials that are used, the closer to a perfect square the wave will become. These can be useful to perfectly eliminate all aliasing for high frequency synths, and to produce intentionally dull square-like timbres.

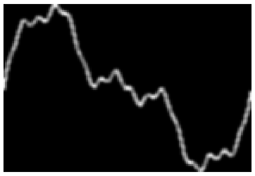
Add - Partials-2N

Waveforms created by adding together two sine partials that have scaled amplitudes where amplitude is 1/frequency (i.e. partial 2 has an amplitude of 1/2.) All combinations up to a partial limit of 32 are provided. These are very useful, for example, for very smooth tones to be used for basses, pads, etc., especially when cross-faded with one-another. They are also good to use in various modulation and distortion synthesis methods which create additional harmonics based on the interaction of two or more waveforms. They are also great to use as moderately complex modulation sources.



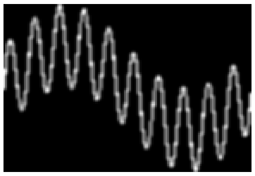
Add - Partials-3N

Waveforms created by adding together three sine partials that have scaled amplitudes where amplitude is 1/frequency (i.e. partial 2 has an amplitude of 1/2.) All combinations up to a partial limit of 16 are provided. These are very useful for very smooth tones to be used for basses, pads, synths, etc. especially when cross-faded with one-another. They are also good to use in various modulation and distortion synthesis methods which create additional harmonics based on the interaction of two or more waveforms. They are also great to use as moderately complex modulation sources.



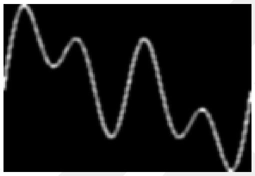
Add - Partials-4N

Waveforms created by adding together four sine partials that have scaled amplitudes where amplitude is 1/frequency (i.e. partial 2 has an amplitude of 1/2.) All combinations up to a partial limit of 16 are provided. These are very useful, for example, for very smooth tones to be used for basses, pads, etc., especially when cross-faded with one-another. They are also good to use in various modulation and distortion synthesis methods which create additional harmonics based on the interaction of two or more waveforms. They are also great to use as moderately complex modulation sources.



Add - Sine-2N

Waveforms created by adding together two sine partials that have scaled amplitudes where amplitude is always 1. All combinations up to a partial limit of 16 are provided. These are very useful, for example, for very smooth tones to be used for basses, pads, etc., especially when cross-faded with one-another. They are also good to use in various modulation and distortion synthesis methods which create additional harmonics based on the interaction of two or more waveforms. They are also great to use as moderately complex modulation sources.

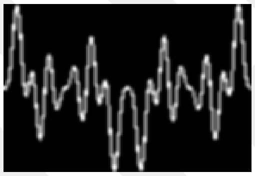


Add - Sine-3N

Waveforms created by adding together three sine partials that have scaled amplitudes where amplitude is always 1. All combinations up to a partial limit of 16 are provided. These are very useful, for example, for very smooth tones to be used for basses, pads, etc., especially when cross-faded with one-another. They are also good to use in various modulation and distortion synthesis methods which create additional harmonics based on the interaction of two or more waveforms. They are also great to use as moderately complex modulation sources.

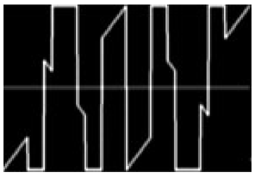
Add - Sine-Multi

Waveforms created by adding together four or more sine partials that have scaled amplitudes where amplitude is either 1/frequency (i.e. partial 2 has an amplitude of 1/2) or fixed at 1 for all partials. They also include some special series such as primes and the Fibonacci series, and have a maximum partial limit of 32. They are also good to use in various modulation and distortion synthesis methods which create additional harmonics based on the interaction of two or more waveforms. They are also great to use as slightly more complex modulation sources.



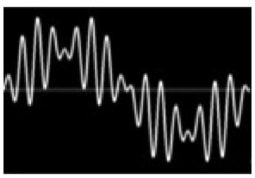
AM - BinMult-RM

Binary Multi Ring Modulation. These waveforms are created by forming 8 "bins" or containers which can either be on (1) or off (0) and each contain a single sine wave partial (1, 2, 3, 4, 5, 6, 7, 8). When a bin is on it is multiplied by all other bins which are on. Off bins have no effect on the signal. This creates progressively more complex ring modulation with more side-bands resulting in fairly dissonant, bell-like timbres but without too much energy in the high harmonics. These timbres can be useful for novel bass and sub-bass sounds and dissonant synths.



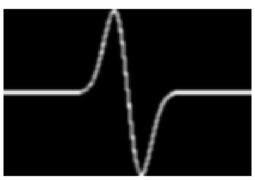
AM - Complex NonSine

Amplitude Modulation waveforms formed by several successive operations giving complex, unpredictable spectrums similar to FM but slightly more tame with fewer side-bands. Some or all operators are not Sine waves, thus giving dense spectrums with lots of harmonic content. Great for effects and uncommon timbres and also interesting for use as an LFO shape.



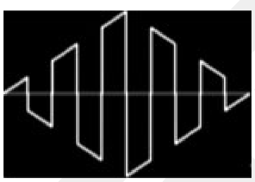
AM - Complex Sine

Amplitude Modulation waveforms formed by several successive operations giving complex, unpredictable spectrums similar to FM but slightly more tame with fewer side-bands. All operators are Sine waves, thus giving less dense spectrums with less harmonic content as compared to the previous group. Great for effects and uncommon timbres and also interesting for use as an LFO shape.



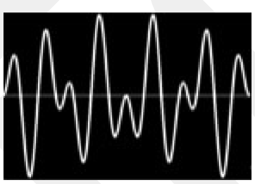
AM - Iterative-AM

Amplitude Modulation waveforms formed by several successive applications of the same operation, which gradually widens the side bands and expands the timbre. All operators are sine waves, thus giving low density spectrums and not too much high frequency energy. A great choice for sub-bass and bass synths and emulating brass instruments. Useful as LFOs as well.



AM - Simple NonSine

Amplitude Modulation waveforms formed by two Non-Sine operators. Spectrums are similar to FM but with fewer sidebands. Great for effects and uncommon timbres. Great for creating evolving modulation patterns with sharp discontinuous steps when used as an LFO.

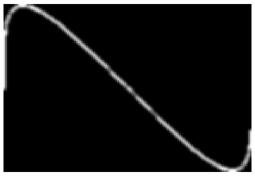


AM - Simple Sine

Amplitude Modulation waveforms formed by two Sine operators. Spectrums are similar to FM but with fewer sidebands. Great for effects and uncommon timbres. Great for creating evolving modulation patterns with smooth curves when used as an LFO.

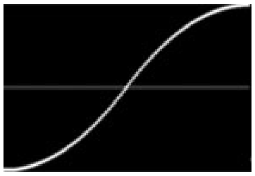
Classic - Pulse

Various forms of pulse waves including traditional Pulse-Width, Bi-polar, and Tri-State pulse waves with various widths and shapes. Standard pulse width waveforms are great sources for subtractive synthesis. Bi-polar and tri-state offer thin, hollow timbres that are interesting for some lead sounds. Mixed together, cross-faded, or detuned they can create some interesting phasing effects.



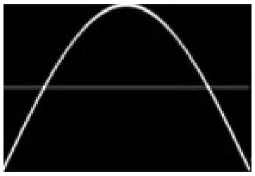
Classic - Saw-Filtered

One of the three universal oscillator types, and thus most common shapes for synthesis. The standard saw contains all partials from one to infinity with an amplitude ratio of 1/frequency for all partials. In these waveforms various other partial decay filter curves are used instead of the 1/F function. Band-limited and resonant filters are also offered to give a variety of saw-like timbres with varying partial strengths. These can be used in place of traditional saw waves for various types of synthesis.



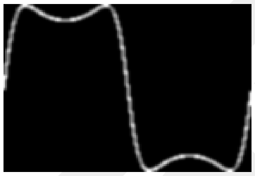
Classic - Saw

One of the three universal oscillator types, and thus most common shapes for synthesis. The standard saw contains all partials from one to infinity with an amplitude ratio of 1/frequency for all partials. This makes it a great start for subtractive synthesis. In addition to the perfect standard saw we have given several variations including various "curved" saws to emulate analog saws, clipped saws, and positive and negative saws in both directions. These variations are excellent to cross-fade with each other to add natural variation in synth patches.



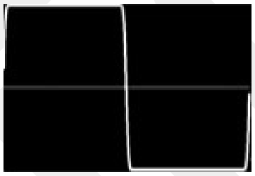
Classic - Sine

One of the three universal oscillator types, and thus most common shapes for synthesis. The standard sine contains only one partial: the fundamental. This makes it a great start for additive synthesis. In addition to the standard sine we have given several variations including rectified sines, half sines, positive and negative sines. etc. Many of these can be extremely useful as modulation sources.



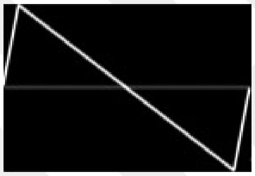
Classic - Square-Filtered

One of the three universal oscillator types, and thus most common shapes for synthesis. The standard square contains all odd partials from one to infinity with an amplitude ratio of 1/frequency for all partials. In these waveforms various other partial decay filter curves are used instead of the 1/F function. Band-limited and resonant filters are also offered to give a variety of square-like timbres with varying partial strengths. These can be used in place of traditional square waves for various types of synthesis.



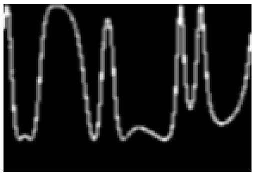
Classic - Square

One of the three universal oscillator types, and thus most common shapes for synthesis. The standard square contains all odd partials from one to infinity with an amplitude ratio of 1/frequency for all partials. This makes it a great start for subtractive synthesis and gives a characteristic "hollow" sound compared to the saw. In addition to the perfect square we have given several variations including smoothed squares that roll-off frequency content.



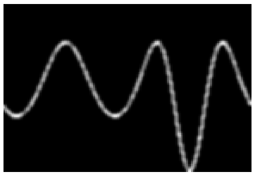
Classic - Triangle

The standard triangle contains all odd partials from one to infinity with an amplitude ratio of 1/frequency^2. It therefore has a much duller sound than the square because the high frequency roll-off is much steeper. It is a useful starting point for pad sounds and similar presets where a filter will be used to accent and diminish some of these low level partials. The triangle wave is also invaluable as a modulation source. We have included a large number of variations including asymmetrical triangles and many others.



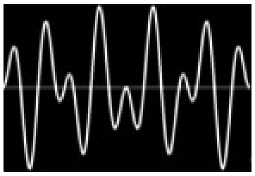
FM - 2-Exp

This group consists of Frequency Modulation waveforms that were created with two exponential sine operators. The three numbers in the names of these waveforms are Carrier, Modulator, and Index in that order. Using exponential sines instead of standard sines shifts the sidebands and changes both the timbre and wave-shape as compared to normal FM techniques. This is a fairly unexplored application of FM techniques and can have interesting results.



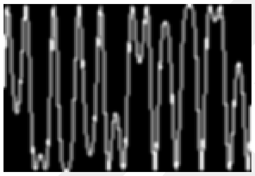
FM - 2-Sine-Cosine

This group consists of Frequency Modulation waveforms that were created with two sine operators where the carrier is in sine phase and the modulator is in cosine phase. All irreducible ratios using integer frequencies up to 16 are provided with a fixed modulation index of Pi. Timbrally the results can be identical using two sine operators, or it can be different depending on whether the operators are odd or even, however the resulting wave-shape is always different and asymmetrical wave-shapes often result here. This has interesting application for LFO use and in non-linear distortion synthesis in which timbre changes are sensitive to the phase of the source.



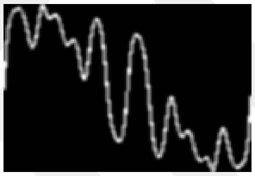
FM - 2-Sine-Sine

This group consists of Frequency Modulation waveforms that were created with two sine operators both the carrier and the modulator are in sine phase. All irreducible ratios using integer frequencies up to 16 are provided with a fixed modulation index of Pi. Results and application of these waveforms are similar to the older "FM - Simple Sine I=1" group, though with a higher index which gives a brighter timbre, and a partial limit that has been extended from 9 to 16 to give more variety.



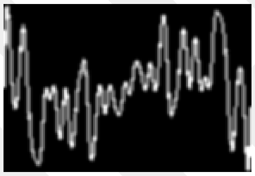
FM - 2-Varriable-Index

This is a massive group that is broken into sub-folders. It represents all possible integer CM ratios with frequency limits up to 17. It offers 9 different indices for each ratio. The purpose of offering this many variations is to build multi-wave and/or wave sequenced wavetables for various synthesis techniques to allow the synth to scan through variations using multi-dimensional arrays of timbres. This is generally a topic for advanced sound-designers.



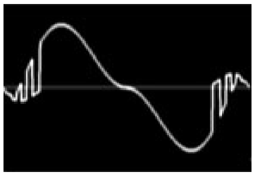
FM - 3

This group consists of Frequency Modulation waveforms that were created with three nested sine operators where all operators are in sine phase. All irreducible ratio combinations using integer frequencies up to 9 are provided with a fixed modulation index of Pi/2. Using three operators gives a richer, more complex timbre as compared to using 2 operators.



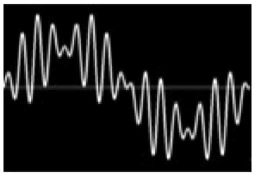
FM - BinAdd-FM

Binary Additive Frequency Modulation. These waveforms are created by forming 8 "bins" or containers which can either be on (1) or off (0). Each bin contains a single simple FM waveform with a carrier of 1 and a variable modulator (1, 2, 3, 4, 5, 6, 7, 8). When a bin is on it is added with all other bins which are on. Off bins have no effect on the signal. This creates progressively more complex timbre with more complex side band patterns which interact with each other in various ways.



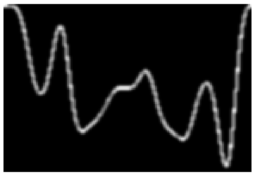
FM - Complex NonSine

This group consists of Frequency Modulation waveforms that were created with several operators where some or all of the operators are not sine waves. Generally speaking this produces waveforms with very complex shapes and spectrums that are very hard to predict. These typically give unusual, sometimes harsh timbres, that work well with some variation of enveloped or modulated filters. They are great for effects. Used as modulation sources they can create unpredictable and interesting results.



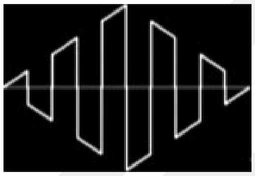
FM - Complex Sine

This group consists of Frequency Modulation waveforms that were created with several sine operators. Generally speaking this produces waveforms with very complex shapes and spectrums that are very hard to predict, but as compared to the previous, these should have less high frequency content an no discontinuous points. These typically give unusual timbres that work well with some variation of enveloped or modulated filters and wave-shaping.



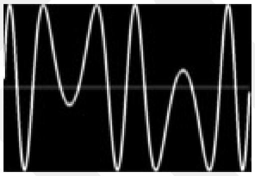
FM - Dual

This group consists of Frequency Modulation waveforms that were created by adding two simple FM waveforms that share a common carrier frequency but a different modulator frequency. The first number in the file name is the carrier and the second two numbers are their modulators. This adds additional complexity to the side-band frequencies and creates additional interest and complexity in the resulting tones and wave-shapes.



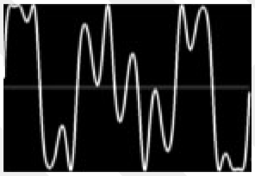
FM - Simple NonSine

This group consists of Frequency Modulation waveforms that were created with two operators where some or all of the operators are not sine waves. Generally speaking this produces waveforms with complex shapes and spectrums that are hard to predict, but not as chaotic as the complex versions. These work well with some variation of enveloped or modulated filters. The three numbers in the names of these waveforms are Carrier, Modulator, and Index in that order.



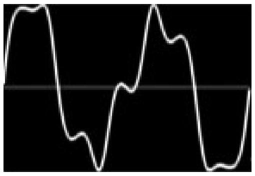
FM - Simple Sine High I

This group consists of Frequency Modulation waveforms that were created with two sine operators and follow the CMI naming convention. This group contains examples of waveforms with very high indexes which produce some very bright FM timbres. These can be interesting in the audio range with a filter. They also can also make interesting modulation sources that can give accelerating and decelerating sine sweeps, when they are transposed down several octaves.



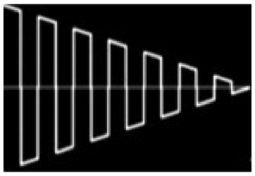
FM - Simple Sine I=1

This group consists of Frequency Modulation waveforms that were created with two sine operators. The three numbers in the names of these waveforms are Carrier, Modulator, and Index in that order. In this grouping we have provided all possible integer ratios between Carrier and Modulator using integers from 1 to 9. The index for all of these is set to 1, which gives a decent amount of modulation without becoming harsh. These are useful for all kinds of smooth FM sounds. For more information on CMI ratios and other FM topics we recommend doing a search on “FM” at www.google.com or www.wikipedia.org.



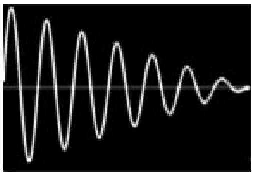
FM - Simple Sine NF

NF is an abbreviation for Normal Form. “Normal Form” basically denotes a class of CM ratios that guarantees that the pitch of the waveform will be equal to the carrier. (Traditionally, other ratios do not follow this rule, which can make them challenging in instrument design.) Due to this fact, these ratios are among the most common used in classic FM synth patches. Here we have provided all NF ratios using integers up to 9, using four different Indexes. Larger indexes will produce brighter sounds; lower indexes will produce duller sounds. These are a great starting point for beginning experimentation with FM.



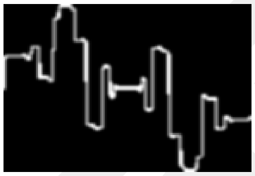
Formants - NonSine

Formants are essentially resonant peaks which occur in human (and other biological) vocal tracks, and other resonating bodies such as the body of a guitar or casing of a drum. See next group. These Waveforms apply the same idea to non-sine partials to give bright, digital, edgy timbres that retain some degree of artificial vocal characteristics.



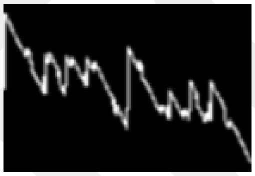
Formants - Sine

Formants are essentially resonant peaks which occur in human (and other biological) vocal tracks, and other resonating bodies such as the body of a guitar or casing of a drum. The shape and size of the resonating body causes some harmonics to be accented and others to be diminished. These waveforms give a simple approximation of this natural phenomenon and are useful for creating sounds that have a distinct vocal character.



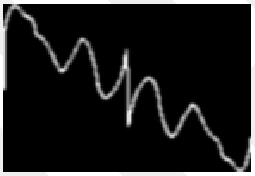
Fractal - AM

This group of waveforms is created by iteratively summing a large number of AM waveforms to produce very dense and complex spectrums which exhibit interesting fractal-like patterns in the time domain representation of the waveform. The resulting waveforms are interesting to use as oscillators in subtractive synthesis engines and work very well with heavy application of time varying filters. They can easily replace Saw and Square waveforms in existing synth patches to give a more unique custom sound signature to existing patches. Used as LFOs, they can give interesting fractal-like, semi-chaotic, stepped modulation patterns.



Fractal - FM-Saw

This group of waveforms is created by iteratively summing a large number of FM waveforms to produce very dense and complex spectrums and unique timbres which can exhibit multi-wave characterizes. The three numbers in the filenames represent of the Carrier, Modulator, and Index used. Larger numbers tend towards more dissonant timbres. The resulting waveforms are interesting to use as oscillators in subtractive synthesis engines and work very well with heavy application of time varying filters. They can also offer unique dissonant timbres for special FX creation.



Fractal - FM-SoftSq

This group of waveforms is created by iteratively summing a large number of odd-frequency FM waveforms to produce very dense and complex spectrums and unique timbres which can exhibit multi-wave characterizes. The three numbers in the filenames represent of the Carrier, Modulator, and Index used. In this group the modulation index used is actually variable for each partial and high frequency partials are scaled down significantly. This exaggerates the differences in the timbres and accentuates strong resonances and dissonances in the spectrums. This group offers from fairly unusual timbres.

Fractal - FM-SoftSw

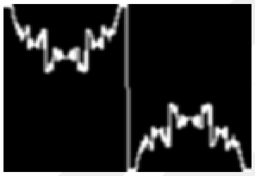
This group of waveforms is created by iteratively summing a large number of FM waveforms to produce very dense and complex spectrums and unique timbres which can exhibit multi-wave characterizes. The three numbers in the filenames represent of the Carrier, Modulator, and Index used. In this group the modulation index used is actually variable for each partial and high frequency partials are scaled down significantly. This exaggerates the differences in the timbres and accentuates strong resonances and dissonances in the spectrums. This group offers from fairly unusual timbres.

Fractal - FM-Square

This group of waveforms is created by iteratively summing a large number of odd-frequency FM waveforms to produce very dense and complex spectrums and unique timbres which can exhibit multi-wave characterizes. The three numbers in the filenames represent of the Carrier, Modulator, and Index used. Larger numbers tend towards more dissonant timbres. The resulting waveforms are interesting to use as oscillators in subtractive synthesis engines and work very well with heavy application of time varying filters. They can also offer unique dissonant timbres for special FX creation.

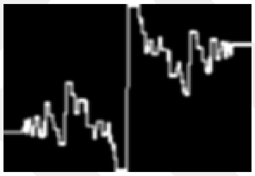
Fractal - Saw

This group of waveforms is created by iteratively summing a large number of Saw waveforms to produce very dense and complex spectrums which exhibit interesting fractal-like patterns in the time domain representation of the waveform. The resulting waveforms are interesting to use as oscillators in subtractive synthesis engines and work very well with heavy application of time varying filters. They can easily replace Saw and Square waveforms in existing synth patches to give a more unique custom sound signature to existing patches. Used as LFOs, they can give interesting fractal-like, nested, iteratively-ramped modulation patterns.



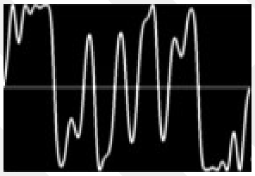
Fractal - Square

This group of waveforms is created by iteratively summing a large number of Square waveforms to produce very dense and complex spectrums which exhibit interesting fractal-like patterns in the time domain representation of the waveform. The resulting waveforms are interesting to use as oscillators in subtractive synthesis engines and work very well with heavy application of time varying filters. They can easily replace Saw and Square waveforms in existing synth patches to give a more unique custom sound signature to existing patches. Used as LFOs, they can give interesting fractal-like, symmetric, stepped modulation patterns.



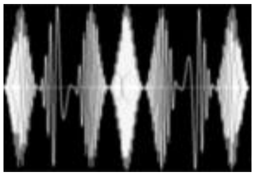
Fractal - Staircase

This group of waveforms is created by iteratively summing a large number of alternating-phase Saw waveforms to produce very dense and complex spectrums which exhibit interesting fractal-like patterns in the time domain representation of the waveform. The resulting waveforms are interesting to use as oscillators in subtractive synthesis engines and work very well with heavy application of time varying filters. They can easily replace Saw and Square waveforms in existing synth patches to give a more unique custom sound signature to existing patches. Used as LFOs, they can give interesting fractal-like, symmetric, stepped modulation patterns.



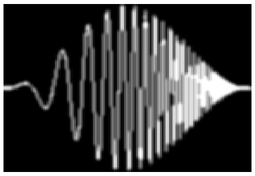
HM - AMFM Sine

Hybrid Modulation combines both FM and AM techniques to produce complex wave-shapes and timbres. This category begins with an AM signal and then applies a Frequency Modulation to it. All operators are sines. The results can be similar to the complex FM shapes, but with characteristic amplitude modulations. These are great as both oscillators and LFO shapes.



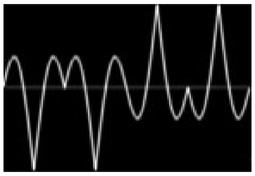
HM - FMAM Sine

Hybrid Modulation combines both FM and AM techniques to produce complex wave-shapes and timbres. This category begins with an FM signal and then applies an Amplitude Modulation to it. All operators are sines. The results can be similar to the complex FM shapes, but with characteristic amplitude modulations. These are great as both oscillators and LFO shapes.



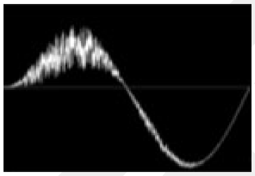
Misc - AM-Sweep

This group offers various waveforms with frequency sweeps that have been amplitude modulated with a cosine wave. This produces a "chirp-like" signal which exhibits some formant-like characterizes when used as an oscillator. These waveforms can also be very useful as LFOs which produce accelerating or decelerating modulation oscillations which also vary over time in their depth.



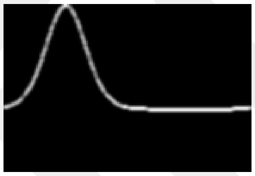
Misc - Artificial

More miscellaneous unusual digital waveforms created in various manners. Experimentation is the key to these.



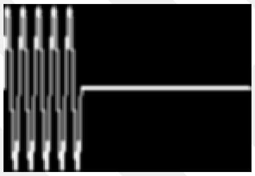
Misc - Asymmetrical

Various forms of asymmetrical waveforms formed by cross-fading one waveform with another over one period. Great for creating pseudo-organic, quasi vocal timbres. These are also excellent to cross-fade with one another over longer periods using an LFO to give even more organic results. Some of these contain a good amount of high frequency partials, so in these cases, an enveloped or modulated filter is a good idea.



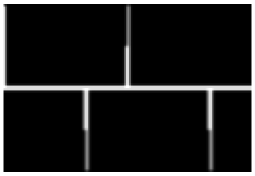
Misc - Exponential-Sine

This group offers sine waves which have been raised to an exponential power. As the number in the file name increases, the wave-shape diverges more from a pure sine wave and begins to have energy at other partial frequencies. Timbres produces are similar to those found in electric pianos and other instruments, and it can be useful to cross-fade several values perhaps with velocity-sensitivity.



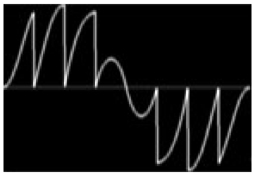
Misc - Gap

This group offers sine and square waves of various frequency repetitions in which some number of the repetitions are muted to leave a silent gap in the waveform before repeating the cycle. This creates an timbral effect that sounds similar to a formant, but is a little more exaggerated and intentionally artificial. These can be very useful for novel LFO patterns as well.



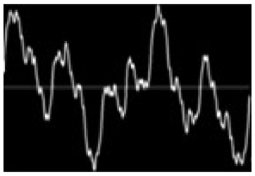
Misc - Impulse-Train

This group provided three varieties of impulse train waveforms at various fundamental frequencies. These can be interesting to use with extreme filtering especially when modulated.



Misc - INVF

These waveforms are created by starting with various asymmetrical shapes (including some that where randomly drawn), reversing them, phase inverting them and cross-fading them with the originals. This process makes them symmetrical and removes any DC offset. These are fairly unusual and experimentation is the key to these.

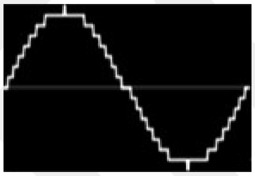


Misc - Iterations

These waveforms are created by starting with various asymmetrical shapes (including some that where randomly drawn), reversing them, phase inverting them and cross-fading them with the originals. This process makes them symmetrical and removes any DC offset. These are fairly unusual and experimentation is the key to these.

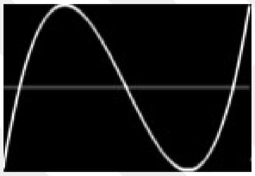
Misc - Line

These are simply DC lines. They have a frequency of zero. They will not produce any sound at all if used as audio sources. Their use comes in being used as modulation sources where it could be desirable to cross-fade them with another waveform to effectively scale the amplitude of the other waveform.



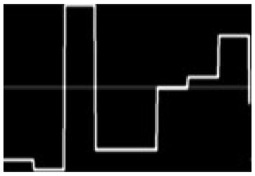
Misc - LoFi

This group provides sine, triangle, and saw waves at 8, 6, and 4 bit depths. (For comparison the rest of this library was created at 64 or 32 bit floating point!) This gives a very low fidelity, low quality, and dirty sound that could be just what is needed to sound cheap or excessively "old-school" when desired.



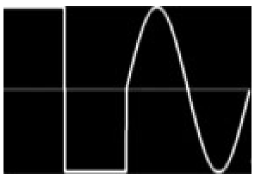
Misc - Polynomials

This group consists of orthogonal polynomial functions. These are particularly useful as wave-shaping curves. When used in this way, these functions can produce distortion that accents specific harmonics in the input signal.



Misc - Random Step

These waveforms are variations of 8 and 16 step random “sample-and-hold” waveforms. They are smoothed very slightly to provide some gliding in-between steps. They can be great as modulation sources to produce periodic sample-and-hold effects. Used as audio waveforms they can give the effect of several chorused pulse or square waves, and can be great for bright, chorused leads.

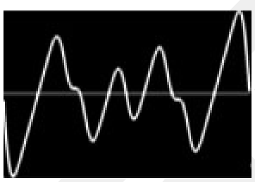


Misc - Serial

These waveforms are formed by dividing the wavetable length into two or more parts and putting a different waveform into each section, such that the resulting waveform alternates between two or more different shapes. This can add some grit to the resulting sound, giving it a biting edginess that is great for electro and trance leads.

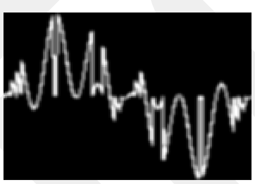
Misc - Sinc

This group provides various Sinc related waveforms. The Sinc function is defined as sin(x)/x, and has a huge number of applications in DSP. Used as an oscillator the Sinc waveforms can be considered as a low-frequency band-limited impulse waveform. Experimentation and creativity is the key with these when using them as oscillators and LFOs.



Misc - Smoothed

Various waveforms subjected to a smoothing function that uses a simple averaging function to eliminate discontinuous points in the waveform, and reducing high frequency partials in the process. These can be useful for warm pads, basses, and synths. They are also useful as modulation envelopes which have quick, but not discontinuous steps.



Modulo - Additive

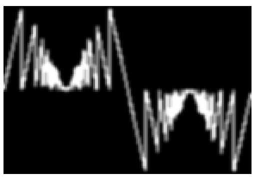
Modulo is a remainder function that is widely used in number theory. Here we abuse it in unusual ways to create very harsh and bright timbres, as the modulo function has the effect of wrapping the functions back on themselves when two functions as compared. These are very interesting to use in subtractive synthesizers with heavy use of modulated and enveloped filters to tame the high frequency content. The timbres will become more dissonant as the numbers in the files get larger. When used as LFOs, these waveforms will produce fairly chaotic modulation patterns with discontinuous jumps and nested, fractal-like behavior.

Modulo - FM

More fun with the modulo function. Here we use FM waveforms to as initial sources. Again these are very interesting to use in subtractive synthesizers with heavy use of modulated and enveloped filters to tame the high frequency content. The timbres will become more dissonant as the numbers in the files get larger. When used as LFOs, these waveforms will produce fairly chaotic modulation patterns with discontinuous jumps and nested, fractal-like behavior.

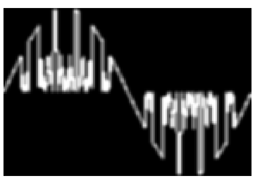
Modulo - Saw

More fun with the modulo function. Here we use saw waveforms instead of sines to as initial sources. Again these are very interesting to use in subtractive synthesizers with heavy use of modulated and enveloped filters to tame the high frequency content. The timbres will become more dissonant as the numbers in the files get larger. When used as LFOs, these waveforms will produce fairly chaotic modulation patterns with discontinuous jumps and nested, fractal-like behavior.



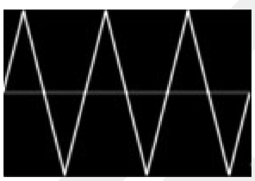
Modulo - SinCos

More fun with the modulo function. Here we compare sine waves which are 90 degrees out of phase using the modulo function. Again these are very interesting to use in subtractive synthesizers with heavy use of modulated and enveloped filters to tame the high frequency content. The timbres will become more dissonant as the numbers in the files get larger. When used as LFOs, these waveforms will produce fairly chaotic modulation patterns with discontinuous jumps and nested, fractal-like behavior.



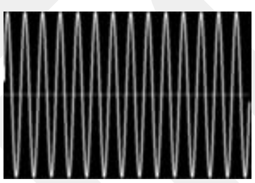
Modulo - Sine

More fun with the modulo function. Here we compare sine waves of different frequencies using the modulo function. Again these are very interesting to use in subtractive synthesizers with heavy use of modulated and enveloped filters to tame the high frequency content. The timbres will become more dissonant as the numbers in the files get larger. When used as LFOs, these waveforms will produce fairly chaotic modulation patterns with discontinuous jumps and nested, fractal-like behavior.



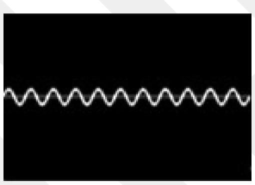
Partials - NonSine

These are simply Saw, Square, and Triangle waves at full scale at various frequencies. They can be useful for all sorts of things such as mixing with one another, modulation sources, and fast construction of other waveforms using various transformation tools. They can also be used to creative synthetic additive timbres.



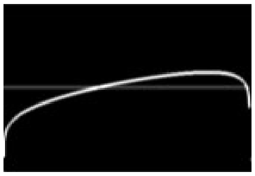
Partials - Sine Fixed

These are simply sine waves at full scale at various frequencies. They can be useful for all sorts of things such as mixing with one another, modulation sources, and fast construction of other waveforms using various transformation tools.



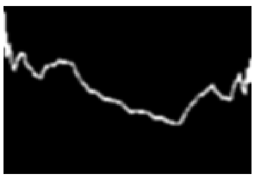
Partials - Proportional

These are also simply sine waves at various frequencies, however they have been scaled in amplitude to have a amplitude ratio of exactly 1/frequency. Thus a waveform with a frequency of 2 has an amplitude of 1/2 or about -6dB. They can be useful for all sorts of things such as mixing with one another, modulation sources, and fast construction of other waveforms using various transformation tools where amplitude proportionality is desirable.



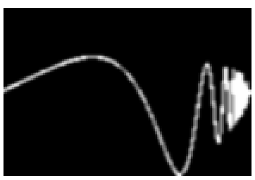
Phase Shift - Static

Common classic waveforms whose partials are subjected to static phase offsets per partial. This can produce waveforms that have a spectrum very similar to the classic waveforms but whose shape diverges. This can be useful when subjected to AM, FM, and other similar modulations, distortion, and DSP processes.



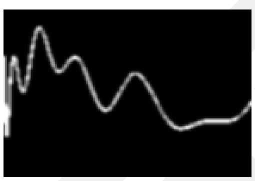
Phase-Shift - Log

The classic saw spectrum waveform whose partials are subjected to varying phase offsets per partial based on various logarithmic curves. This can produce waveforms that have a spectrum very similar or identical to the saw waveform but whose shape diverges. By itself, this is an inaudible difference at higher pitches, but it can be heard as a micro-phasing characteristic in very low pitches. This can be useful when subjected to AM, FM, and other similar modulations, distortion, and DSP processes which are sensitive to phase. These also produce very interesting modulation patterns when used as LFOs.



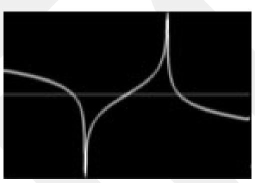
Phase-Shift - Pow

The classic saw spectrum waveform whose partials are subjected to varying phase offsets per partial based on various power curves. This can produce waveforms that have a spectrum very similar or identical to the saw waveform but whose shape diverges. By itself, this is an inaudible difference at higher pitches, but it can be heard as a micro-phasing characteristic in very low pitches. This can be useful when subjected to AM, FM, and other similar modulations, distortion, and DSP processes which are sensitive to phase. These also produce very interesting modulation patterns when used as LFOs.



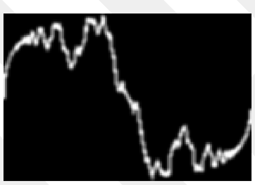
Phase-Shift - Rcp

The classic saw spectrum waveform whose partials are subjected to varying phase offsets per partial based on various reciprocal curves. This can produce waveforms that have a spectrum very similar or identical to the saw waveform but whose shape diverges. By itself, this is an inaudible difference at higher pitches, but it can be heard as a micro-phasing characteristic in very low pitches. This can be useful when subjected to AM, FM, and other similar modulations, distortion, and DSP processes which are sensitive to phase. These also produce very interesting modulation patterns when used as LFOs.



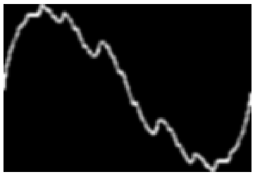
Series - Misc

Perfectly band-limited waveforms created by summing large number of discrete sine partials in various specific series and amplitude ratios. (For example: "Every 3rd from 1" N=1, 4, 7, 10 etc.) Unless noted in the waveform name these series extend up to the 1024th partial. Various mathematical algebraic series and formulas of interest are explored with several variations. These waveforms offer some very interesting timbres that can be quite unique.



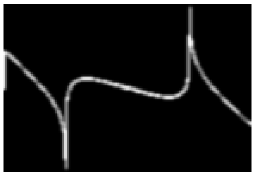
Series - Polygonal

This group offers multi-dimensional figurative or two-dimensional polygonal number partials. For example triangle numbers (1, 3, 6, 10, 15, 21...) or square numbers (1, 4, 9, 16, 25, 36...) etc. The numbering in the filenames provide the number of sides for the polygon or the number of dimensions, plus an integer offset to the partials for additional variety. These waveforms offer unique timbres that have hollow, bell-like characterizes. They can be very useful for pads when chorus FX are applied.



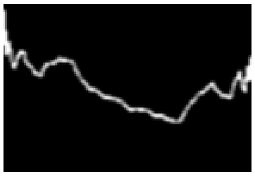
Series - Special

Perfectly band-limited waveforms created by summing large number of discrete sine partials in various specific series and amplitude ratios. Unless noted in the waveform name these series extend up to the 1024th partial. Various mathematical series of interest such as Primes, Fibonacci, Lucas and other series are explored with several variations.



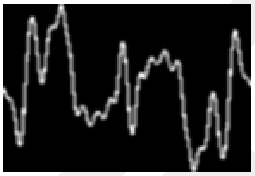
Spectral - Gate-Lin

These waveforms are created spectrally by summing 1024 sine wave partials. The partial amplitude ratio is (1/F). Partials are then subjected to a periodic square wave gate in the frequency domain which turns then on or off. This gating function has a linear integer period length and an offset as specified respectively in the file name. For example "03 00" gives the following partials: 01, 02, 03, 07, 08, 09, 13, 14, 15, 19, 20, 21…. The A and B versions differ only in phase: A is symmetric, B is asymmetric. These waveforms are a good choice for Subtractive Synthesis Oscillators and have a characteristic vocal, formant-like character to them.



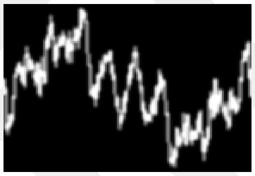
Spectral - Gate-Log

These waveforms are created spectrally by summing 1024 sine wave partials. The partial amplitude ratio is (1/F). Partials are then subjected to a logarithmic square wave gate in the frequency domain which turns then on or off. This gating function has a Log base as specified respectively by the first number in the file name. The second number inverts the partial gate. The A and B versions differ only in phase: A is symmetric, B is asymmetric. These waveforms are a good choice for Subtractive Synthesis Oscillators where they can replace standard Saw and Square waves to give more unique timbres. They have a characteristic vocal, formant-like character to them.



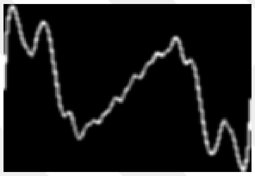
Spectral - SPM - I-LF

These waveforms are created spectrally by summing 1024 sine wave partials. The partials amplitudes are defined by a proprietary algorithm developed by Galbanum following much research into this area. "I" in the folder name stands for Irrational, and this generally means the timbres here will tend towards being dissonant and unusual. "LF" stands for Low Frequency which indicates most of energy of these waveforms will be concentrated on lower number partials, and therefore they will have a smoother tone. These can be useful for percussion synthesis for example.



Spectral - SPM - I

These waveforms are created spectrally by summing 1024 sine wave partials. The partials amplitudes are defined by a proprietary algorithm developed by Galbanum following much research into this area. "I" in the folder name stands for Irrational, and this generally means the timbres here will tend towards being dissonant and unusual. These waveforms are fairly bright and are geared towards subtractive synthesis.

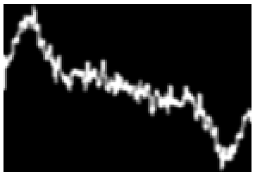


Spectral - SPM-Lin-LF

These waveforms are created spectrally by summing 1024 sine wave partials. The partials amplitudes are defined by a proprietary algorithm developed by Galbanum following much research into this area. "LF" stands for Low Frequency which indicates most of energy of these waveforms will be concentrated on lower number partials, and therefore they will have a smoother tone. These are generally very organic sounding waveforms that are useful as starting points for emulation of acoustic and biological sounds.

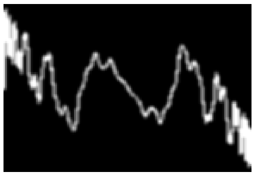
Spectral - SPM-LinA

These waveforms are created spectrally by summing 1024 sine wave partials. The partials amplitudes are defined by a proprietary algorithm developed by Galbanum following much research into this area. This group offers varying brightness and varying degrees of timbral diversity. The rest is top secret. "Try 'em, you'll like 'em. They're one of a kind."



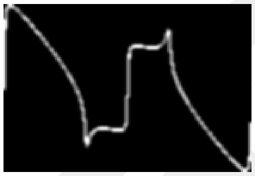
Spectral - SPM-LinB

These waveforms are created spectrally by summing 1024 sine wave partials. The partials amplitudes are defined by a proprietary algorithm developed by Galbanum following much research into this area. This group offers varying brightness and varying degrees of timbral diversity. The rest is top secret. "Try 'em, you'll like 'em. They're one of a kind."



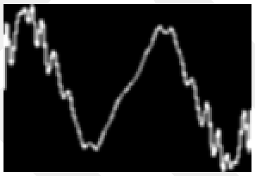
Spectral - SPM-Log

These waveforms are created spectrally by summing 1024 sine wave partials. The partials amplitudes are defined by a proprietary algorithm developed by Galbanum following much research into this area. This group offers varying brightness and varying degrees of timbral diversity. The rest is top secret. "Try 'em, you'll like 'em. They're one of a kind."



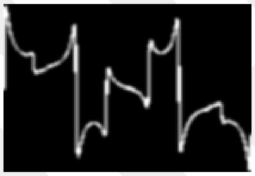
Spectral - SPOSC-2Lin

These waveforms are created spectrally by summing 1024 sine wave partials. The partials amplitudes are defined by a proprietary algorithm developed by Galbanum following much research into this area. This group offers varying brightness and varying degrees of timbral diversity. The rest is top secret. "Try 'em, you'll like 'em. They're one of a kind."



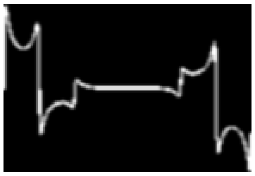
Spectral - SPOSC-2Log

These waveforms are created spectrally by summing 1024 sine wave partials. The partials amplitudes are defined by a proprietary algorithm developed by Galbanum following much research into this area. This group offers varying brightness and varying degrees of timbral diversity. The rest is top secret. "Try 'em, you'll like 'em. They're one of a kind."



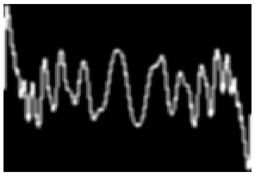
Spectral - SPOSC-Lin-I

These waveforms are created spectrally by summing 1024 sine wave partials. The partials amplitudes are defined by a proprietary algorithm developed by Galbanum following much research into this area. This group offers varying brightness and varying degrees of timbral diversity. The rest is top secret. "Try 'em, you'll like 'em. They're one of a kind." "I" in the folder name stands for Irrational, and this generally means the timbres here will tend towards being dissonant and unusual.



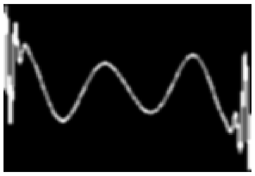
Spectral - SPOSC-Lin-R

These waveforms are created spectrally by summing 1024 sine wave partials. The partials amplitudes are defined by a proprietary algorithm developed by Galbanum following much research into this area. This group offers varying brightness and varying degrees of timbral diversity. The rest is top secret. "Try 'em, you'll like 'em. They're one of a kind." "R" in the folder name stands for Rational, and this generally means the timbres here will tend towards being less dissonant and more consonant than their irrational counterparts.



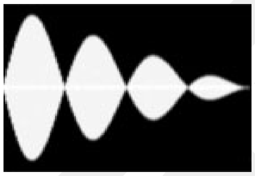
Spectral - SPOSC-Log-I

These waveforms are created spectrally by summing 1024 sine wave partials. The partials amplitudes are defined by a proprietary algorithm developed by Galbanum following much research into this area. This group offers varying brightness and varying degrees of timbral diversity. The rest is top secret. "Try 'em, you'll like 'em. They're one of a kind." "I" in the folder name stands for Irrational, and this generally means the timbres here will tend towards being dissonant and unusual.



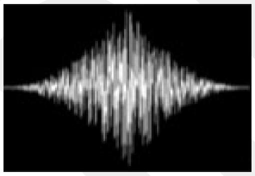
Spectral - SPOSC-Log-R

These waveforms are created spectrally by summing 1024 sine wave partials. The partials amplitudes are defined by a proprietary algorithm developed by Galbanum following much research into this area. This group offers varying brightness and varying degrees of timbral diversity. The rest is top secret. "Try 'em, you'll like 'em. They're one of a kind." "R" in the folder name stands for Rational, and this generally means the timbres here will tend towards being less dissonant and more consonant than their irrational counterparts.



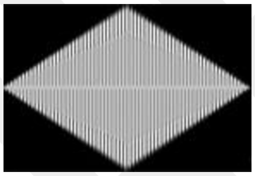
UHF - Complex

UHF stands for Ultra High Frequency. These are quite interesting and the most complex of all the waveforms in this library. They are constructed beginning with some of UHF Simple waveforms and then applying various FM, AM, and other modulations to them. Most of them have extremely complex and dense spectrums, and all of them contain extreme frequencies. Used in musical pitch ranges they will almost certainly produce extreme aliasing, which when used intentionally as a tool, can be a useful special effect. Pitched down several octaves or used as LFO sources they can create some very interesting “chaotic” effects. Combine them with enveloped and modulated filters and the results can be otherworldly. When subjected to or used as a modulation source they can create amazing grain-like effects.



UHF - Simple Noise

Ultra High Frequency noise that is amplitude modulated at a much lower rate to create enveloped chaotic waveforms. The same notes as above apply here with the noted exception that these are almost pure noise with no strong signals at all so the results will be almost completely chaotic. Note also the since there are no strong signals here the aliasing produced by these waveforms will also generally be chaotic itself. The same uses as above apply.



UHF - Simple Periodic

Ultra High Frequency simple waveforms, with some amplitude modulated at a much lower rate. Again the same notes apply as above, but these are all perfectly periodic so the resulting spectral components will be harmonic and if these are used in the audio range the aliasing signals will be also periodic. Used at very low frequencies these can produced predictable, evolving modulations.