



## Patch 13 FM Synthesis (Frequency Modulation)

Instead of using the filter (VCF) to modulate complex waves, **frequency modulation** allows you to *build* rich and complex sounds from simple sine waves.

Using one audible signal (sine wave) from one VCO to modulate the frequency of the second VCO, you can generate harmonic complexity and create sound '**coloring**' and new **timbres**.

After patching the first VCO to the **MOD IN** of the second VCO, adjust the tuning of the 1st VCO to see how it changes the resulting sound (frequency modulation).



Increase the **MOD AMOUNT** to create interesting timbres and sound complexity.

The **sine wave** offers a smooth tone with no harmonic complexity. But when you use a sine wave to modulate another VCO, you can create rich timbres and complex sounds!



sine wave      sine wave

Effects to Mixer or to DAW