

MS-20EX Tutorial 3

Programming a Laser Harp Sound

and more!

Goals: Program a JMJ like Laser Harp sound with the MS-20EX, and add Kronos effects.

Level: Beginner - Intermediate.

Time: approx. 30-40 min.

Material: KORG Kronos & MS-20EX Block Diagram.

The Laser Harp
Experiment

This tutorial describes step by step how to program a laser harp sound with the KORG Kronos MS-20EX Synth Engine.

This tutorial consists of following parts:

1. Introduction.
2. Program Setup.
3. Fat Sound with Unison.
4. The Beauty Pass - Kronosification.
5. Time to Try the Beast.
6. Sliding your Finger - External Modulation Source: the ribbon.
7. Unleash the Beast...
8. Settings of JMJ Laser Harp (final).
9. Sources Used.

A Kronos 61 was used
to create this tutorial

1. Introduction

In this tutorial you will program the **Jean Michal Jarre Laser Harp** sound as he played in **Rendez-vous**.

Before starting to create this sound, I had to do some research. And the best point to start is Wikipedia (see last slide for the sources that I've used).

The **Laser Harp** sound is a standard preset of a **Elka Synthex** synthesizer. Namely, Preset 46 called **Ring Mod**.

The name gives us already a clue ... maybe use *ring modulation*.

On youtube I found a nice demo of this sound. Jee, this Elka Synthex is an aggressive beast. As mentioned in the demo "*The original Synthex sound has a lot of punch. Not an easy task to recreate it on other synths.*" (link? Yep, on the last slide)
Well, that's helpful, but try it anyway.

JMJ Rendezvous
&
Elka Synthex



Our work horse is the MS-20EX. In this tutorial anyway. However, you can also use the HD-1 or AL-1, I guess. I've spent many hours tweaking VCO's VCF's and Kronos effects.

To make your life a little easier, I will (almost) continue with the easy-to-use sound schemas.

It is only logical that the next tutorial will be about setting up the **Rendezvous** combi and play it. Be patient, first we have to build us a laser harp...

1. Introduction

Before we go to the settings chart, I will first explain a little more about the process behind it.

The MS-20EX has two oscillators. That's nice, but sometimes it is easier if you first program one **VCO** closely to the sound you want (set **VCO MIXER VCO 1 LEVEL = 10**, **VCO 2 LEVEL = 0**). Then adding **VCO 2** by setting **VCO 2 LEVEL = 10**. Or **VCO 2** on its own and then mixing them.

After that find the right balance between the levels of the **VCO mixer**.

Do not forget to try different **SCALE** settings for each **VCO**.

Similar for the **EG ADSR**. First set the ADSR envelope you think it should be. Then try different settings of the **EG 2/EXT** levels for the filter you use.

It sometimes is a balancing act.

Especially if the ADSR envelope is influencing the **VCFs**.

Try different settings of **DELAY**, **SUSTAIN** and **EG 2/EXT**.

Also, try different settings for the **VCO CUTOFF FREQUENCY**. Then tune it with **PEAK** to give it some vibrance. Sometimes it works, sometimes it doesn't. That's okay.

This tutorial went through many different incarnations, because every time I discovered a new thing which could make it more ... well how shall I put it ... more JMJ.

This laser harp sound turned out to be a bigger challenge than expected.

First, I tried to get the clean sound as close as possible to what I had in mind. Then, I added Kronos effects. First many, and I got lost in the great forrest of effects, then reducing one by one.

Although, in the end it was really a back and fourth between tuning the MS-20EX and Kronos effects.

Also I use two **EXis**. One for the sound in general and one to deliver the punch.

Well, the proof is in the pudding. Judge for yourself at the end of this tutorial. I hope it gives you as much fun as it did for me.

1. Introduction

To summarize:

- 1. Get an idea of the sound that you want. Listen to CD tracks or find sound demos on Youtube or so.
- 2. Look for a similar sound in you Kronos libraries and study the settings.
- 3. Determine the ADSR envelope to start with.
- 4. Determine if you want to use a high or low cutoff frequency. Just turn the knobs and listen while you play.
- 5. Tune it further with Peak.
- 6. Use EG 2/EXT to determine the amount you want the ADSR envelope to influence the VCF. Again, turn the knob while playing.
- 7. Add some Kronos effects. The same is true here. Find similar sounds on your Kronos and see what effects are used. My personal experience is to keep them simple. Not too many. When I have many effects, then I know that I'm just fooling around and hope that I find the right combination by accident.

As I'm not a professional sound designer, I might come back on this later with a better strategy on how to create sounds ;-)
The key is, don't be afraid to experiment.
The Kronos a big complex machine.
Go through it step by step, and you won't get lost in all those effects, settings, programs, combis, samples, song stuff, karma, etc.



2. Program Setup

1. Select a free USER Program and select the **Common** tab. Then select the **Basic/Vector** tab and then the **Program Basic** tab. Set the **EXi 1 Instrument Type** to **MS-20EX**.
2. Select the **EXi 1** tab and then the **Osc & Filter** tab, if not selected.
3. First “reset” the MS-20EX by setting:



VCO MIXER

VCO 1 LEVEL = 10
VCO 2 LEVEL = 10

VOLTAGE CONTROLLED LOWPASS FILTER

CUTOFF FREQUENCY = 0
PEAK = 0

CUTOFF FREQUENCY MODULATION

EG 2/EXT = 0

Leave the other values at their default settings.

4. Now select the **MG, EG, & Mod** tab. We have to reset a few more values:

We end up with ... no sound. That's okay for now. We clearly did reset the MS-20EX.

ENVELOPE GENERATOR 2

DECAY TIME = 0
SUSTAIN LEVEL = 0
RELEASE TIME = 0

Leave the other values at their default settings.

2. Program Setup

It's important to save (or write) your program (or sound).

5. Select the **Play** tab. Select on the **Page (Main)** menu (top right of screen) **Write Program**.
6. The **Write Program window** pops up. Select the **text field** and type the name **Laser Harp JMJ** using the keyboard on screen. Select **OK**.
7. Now, select **Program:** and select **a free location**, then select **OK**. Again **OK** in the **Are You Sure ?** window.

Saving your Sound

Write Program

If this is the first time you're programming the MS-20EX, then you should first do tutorial 1 and 2.

2. Program Setup

Because you're using two EXi's for this massive sound, and you don't want to reset two MS-20EX's, you have to copy this EXi 1 to EXi 2.

8. Select the **Common** tab. Then select the **Basic/Vector** tab and then the **Program Basic** tab.

9. Select from the **Program Basic menu** (page menu top right on screen) **Copy Exi Oscillator**.

10. The Copy EXi Oscillator window pops up. Make sure that:

From: > **EXi 1**

Program: > **the number of your USER program (see step 6)**

To: > **EXi 2**

11. Select **OK**. You now have two MS-20EX synths at your disposal.



You can copy 'any' program's EXi if you want.
Great to create new sounds with existing EXis.

2. Program Setup - Laser Harp

The settings of the two EXis.

EXi 1: The laser harp sound.

EXi 2: The extra attack punch.

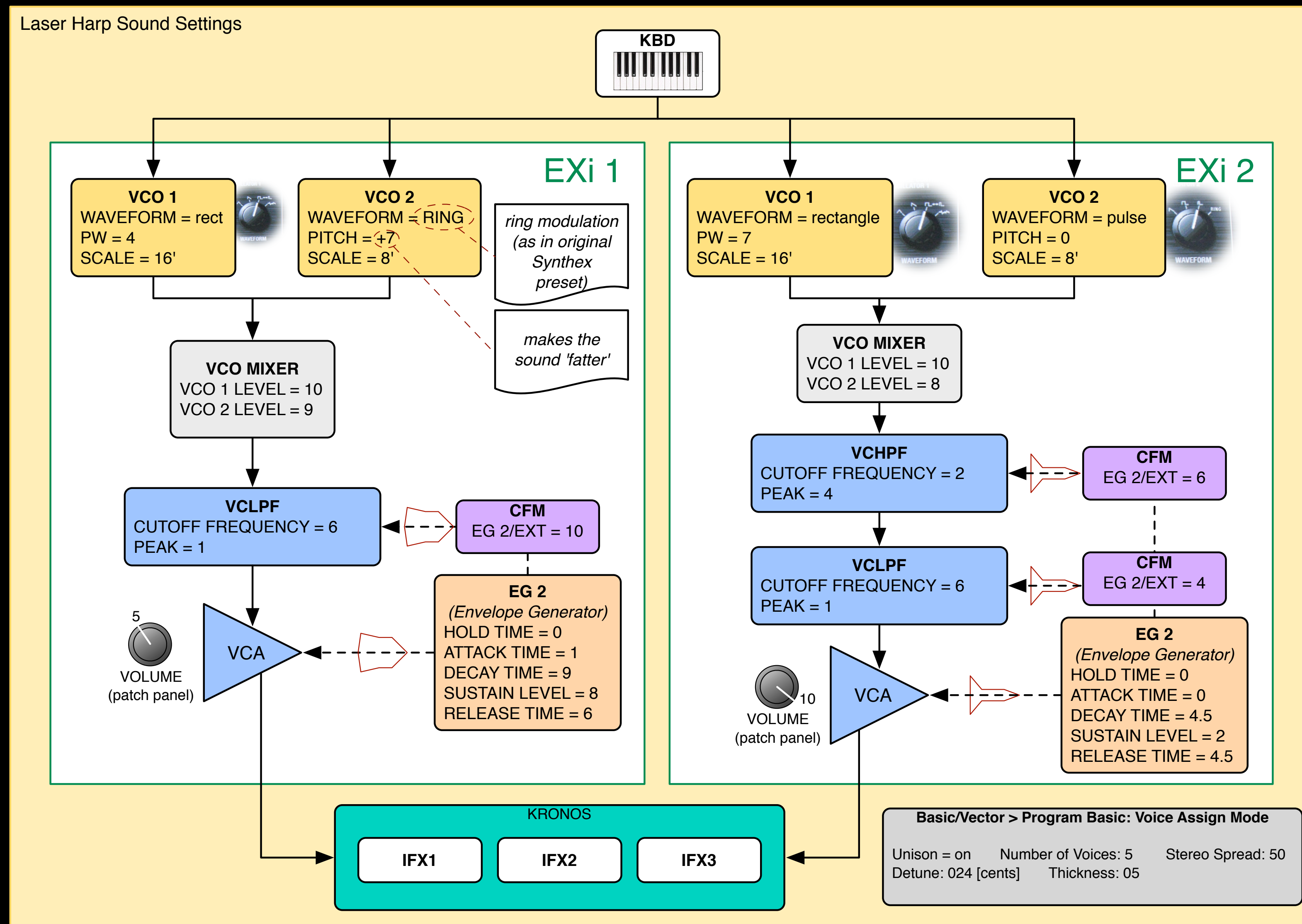
(check the different EG ADSR envelopes)

Also see the *Kronos Parameter Guide* page 305 about the ADSR and VCF.

12. Select the EXi 1 tab and program the Laser Harp sound according to the schema →

Select the EXi 2 tab and program the Laser Harp sound according to the schema →

The next slide shows screen shots.



2. Program Setup - Laser Harp

Or if you're more into screen shots (Kronos Editor).

They have the same values as the schema on the previous slide. Only a different way of looking at it.

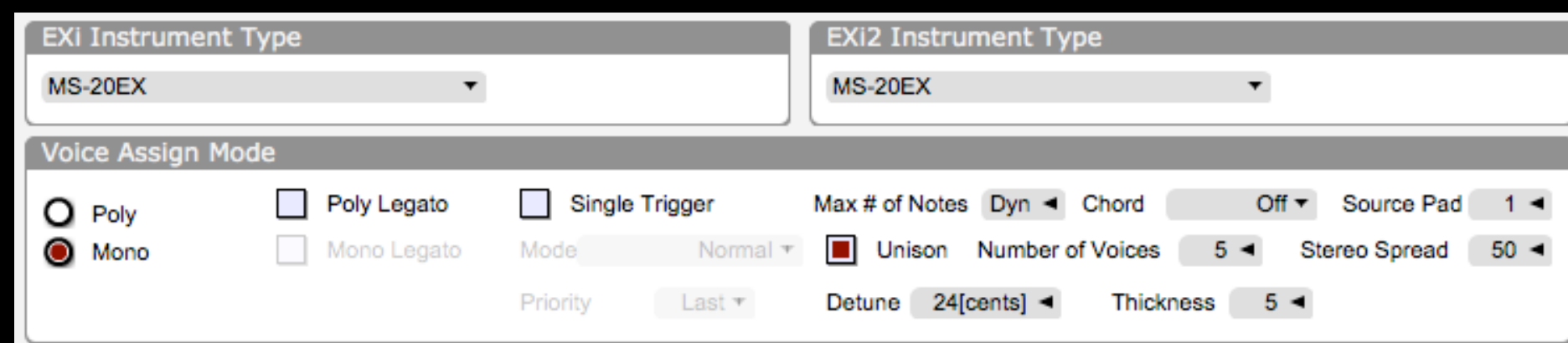
EXi 1:
The laser harp sound.



EXi 2:
The extra attack punch.



Common > Basic/Vector > Program Basic



The above settings will be explained shortly, but first something about real knobs...

2. Program Setup - Laser Harp

Lets just continue a little further with how you can set the values of the different knobs. I personally like to turn real knobs.

For this you can use the **MS20-EX Tone Adjust** to set these values.

Press the **TONE ADJ/EQ** button of your front panel **Control Assign** switches and you can use the knobs and sliders to control the VCO's, EG, etc.

See *Kronos Parameter Guide* on page 319.

Front Panel: Tone Adjust



The next slide describes the **Voice Assign Mode** to create a **thick** sound.

3. Fat Sound with Unison

In **Unison** mode a number of detuned voices create a **fat** sound.

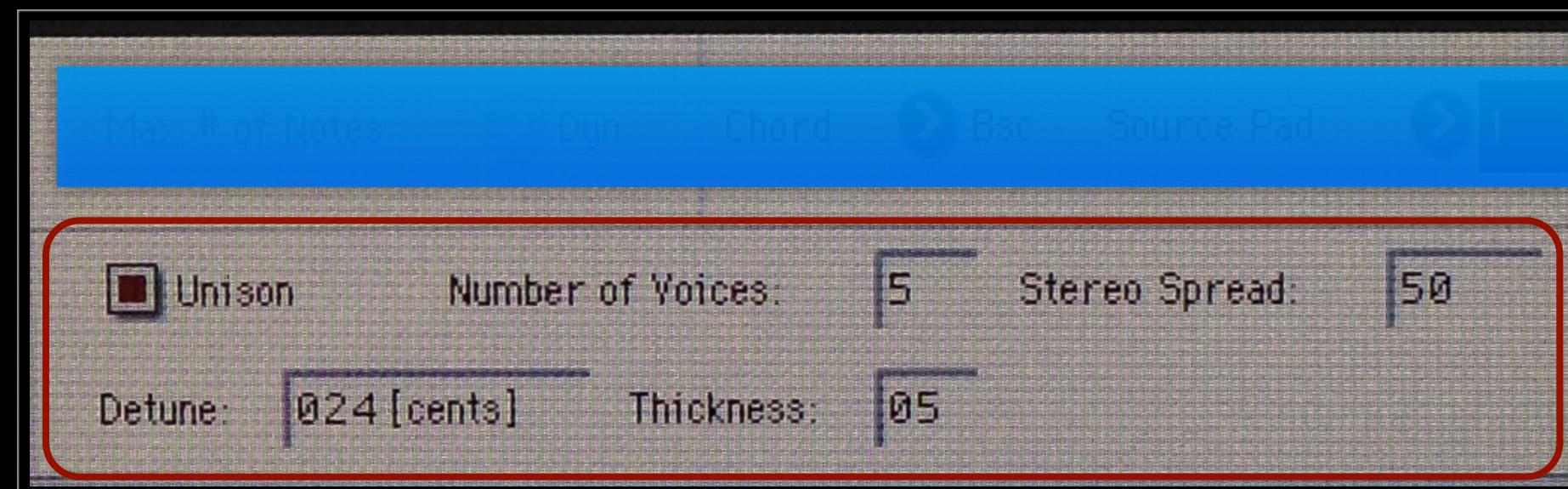
In the original Polysix all 6 voices are assigned to one note. These individual voices are automatically detuned slightly to produce a thick, fat texture. For more information, please see [PolysixEX Tutorial 6 The Voice Assign Mode](#).

The MS-20 does not have the same feature as the Polysix. However, on the Kronos you can still access it in the [Voice Assign Mode section](#).

Detune sets the tuning spread for the Unison voices in cents (1/100 of a semitone).

Thickness controls how the voices are distributed across the detune amount. When Thickness is off, the voices are distributed evenly, centered around the basic pitch.

In the Voice Assign Mode section:



Unison

Detune

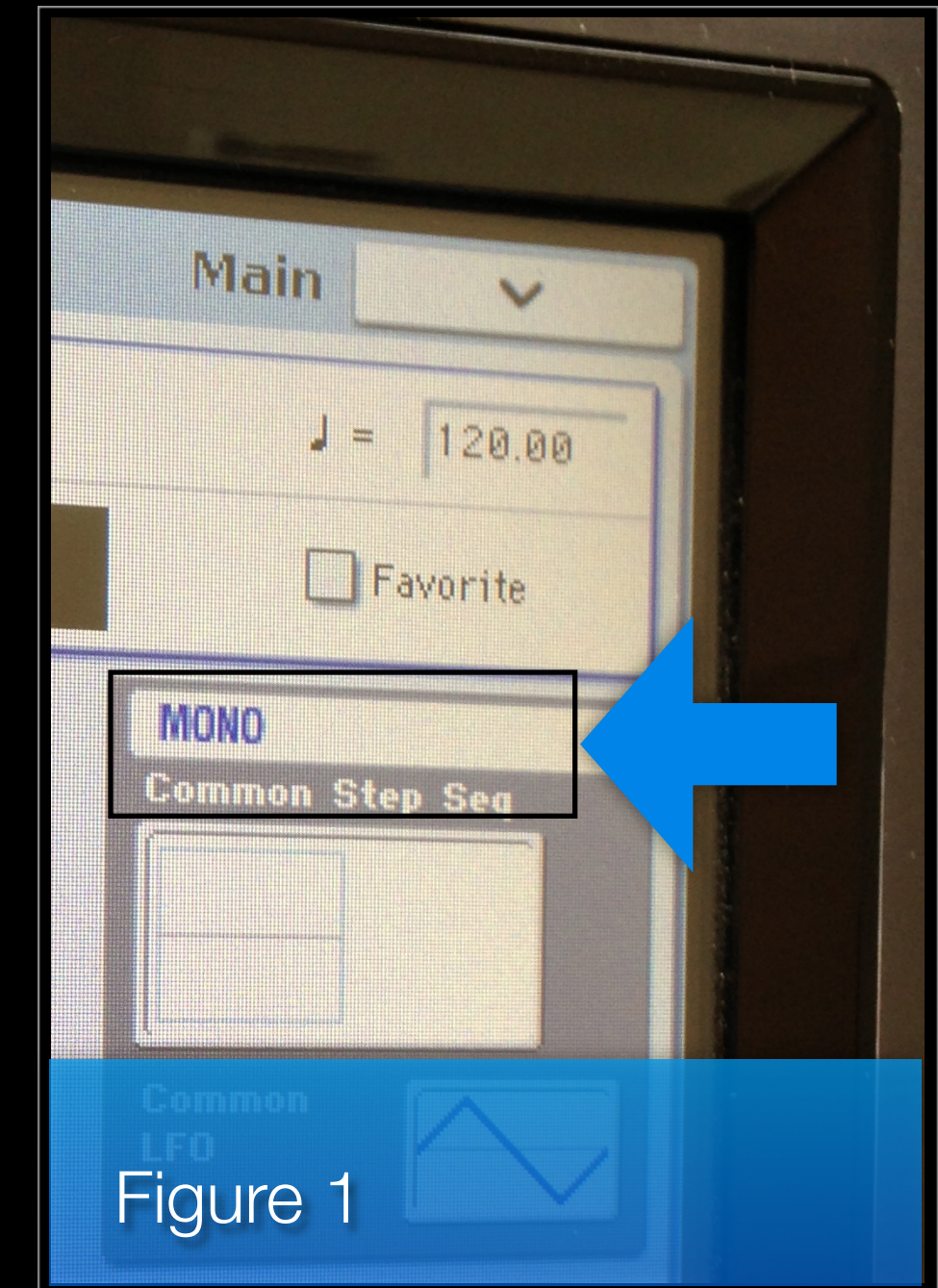
Thickness

3. Fat Sound with Unison

To find the **Voice Assign Mode**, select the **Common** tab, then the **Basic/Vector** tab, and then the **Program Basic** tab.

"Jee", you might say, "is there no shorter way?"

Yes, there is. When the **Play** tab is selected, press the **MONO** or **POLY** section as indicated in figure 1.



13. Go to the **Program Basic** page as explained above.

14. In the **Voice Assign Mode** area, select the round **Mono button** and a **red** dot appears.

You've just switched the synth from Poly to Mono mode. Play some notes to test this.

15. Now select the square **Unison button**, so the **red** square appears.  It is now switched on.



Note that Unison can be used in Mono and Poly mode. For this tutorial we use it in Mono mode for our sound.

3. Fat Sound with Unison

Number of Voices

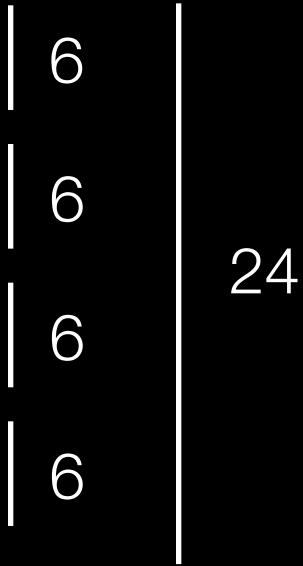
16. In the **Voice Assign Mode** area, right to the **Unison** checkbox, you'll see **Number of Voices**. The number of voices that can be assigned is 2...16. For this tutorial we set **Number of Voices** = 5. Play some notes to hear the effect.

Too many voices make the sound too fat in our case. Why an odd number? Then there is always one voice in the center. And if you don't want that, select and even number. To control these voices you have to set **Detune** and **Thickness**. See page 171 of the *Kronos Parameter Guide*.

The *Kronos Parameter Guide* gives two examples. The table to the right explains it for the settings in this tutorial: Number of Voices = 5, Detune = 24, and Thickness = off. See the table →

Voice	Detune
1	-12
2	-6
3	0
4	+6
5	+12

Detune Distribution over the Voices



3. Fat Sound with Unison

17. In the **Voice Assign Mode** area, set **Detune = 24**. Play some notes to hear the effect. It's thicker. You can try other values to get a feel of the range.

Detune

Thickness controls the character of the detuning for the Unison voices.

For values from 01 to 09, Unison voices will be detuned in an asymmetric way.

This will increase the complexity of the detune, and changing the way in which different pitches beat against one another.

This creates an effect similar to **vintage analog synthesizers**, in which oscillators were frequently slightly out of tune.

Higher numbers increase the effect.

vintage analog
synthesizers

18. In the **Voice Assign Mode** area, set **Thickness = 5**. We don't want it too wobbly. Play some notes to hear the effect. More vintage! Although the difference between values is not that big, we don't know yet if it gets more amplified when adding Kronos Effects.

Thickness

3. Fat Sound with Unison

The last parameter is **Stereo Spread**. Stereo Spread lets you create a wider stereo field when using Unison.

Stereo Spread separates the different Unison voices into two groups.

One group is panned to the left, and the other to the right.

At 0, both groups will be in the center.

At 100, the two groups will be hard-panned left and right, respectively.

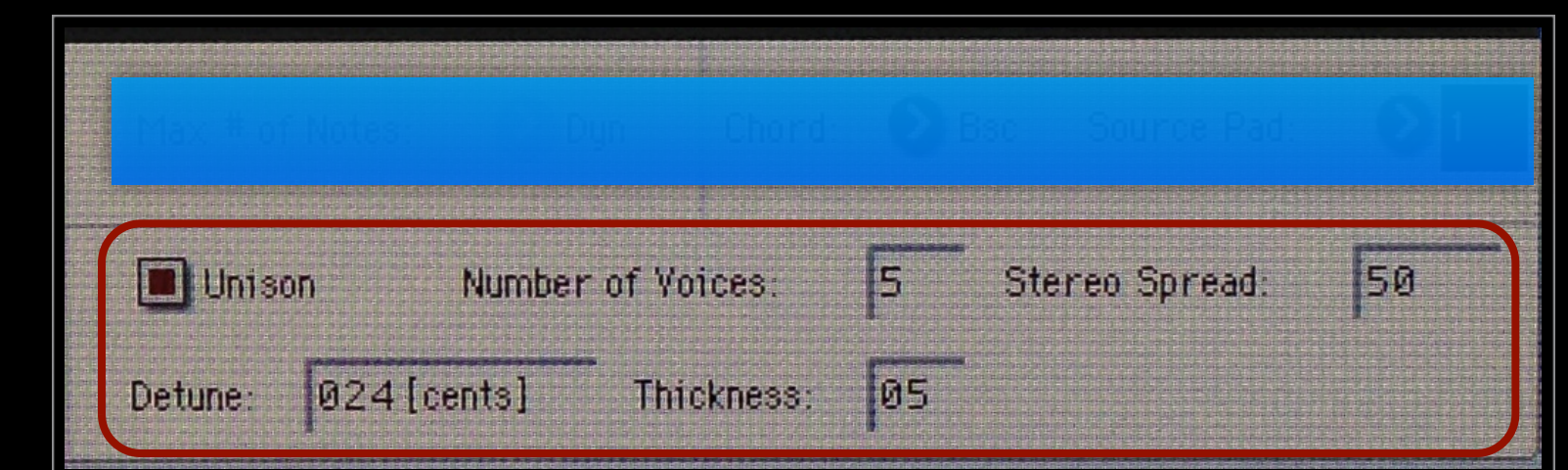
If there is an *odd number of voices*, one voice will be panned in the center.

Depending on the **Thickness** setting, the detuning may lean slightly to one side.

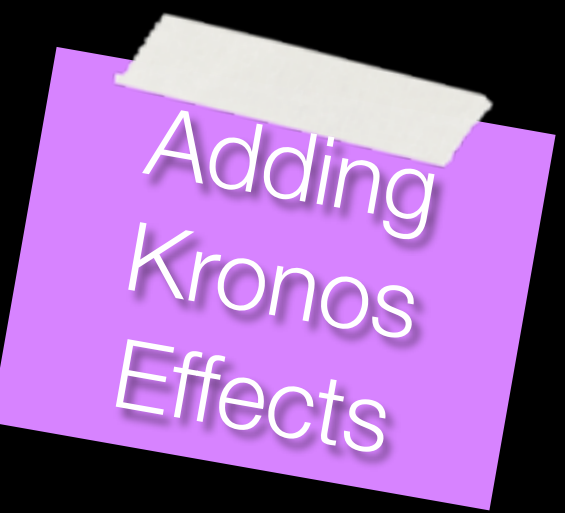


19. In the **Voice Assign Mode** area, set **Stereo Spread = 50**.
Should be enough for now. You still want to use some Kronos Effects as well. So, let's go to the *Beauty Pass*.

Summary of the settings:



4. Beauty Pass - Kronosification



When the KORG Kronos was introduced at NAMM 2011, I saw Jordan Rudess play it. One of his special sounds is the *snoring pig*. This sound reminded me a little of the laser harp. So, the next step was to go through the sounds of my Kronos and see if something sounded closely enough to be of any help.

Sometimes you have to modify an existing sound, instead of creating it from scratch. This saves time. And, suddenly... there it was... **USER-G 010: JR SNORING PIG**. Super! I didn't even know that it was there. Okay... it's an HD-1, not a MS-20EX. Hmm, what can I learn from it.

The 2nd oscillator's **transpose** is **7**. I use that. It's called **Pitch** on the MS-20EX.

Inspecting the IFXs. Great, the **Talking Modulator** and **Stereo Chorus** can be very helpful for the Laser Harp Sound. Let's use these...or not.

After a lot of tweaking it seemed that the Talking Modulator wasn't that great for the higher notes. What you'll find below is another working alternative. Simple, but effective.

20. Select the **Common** tab, the **IFX** tab, and then the **Insert FX** tab.

21. Insert the effects according to the picture in figure 1.

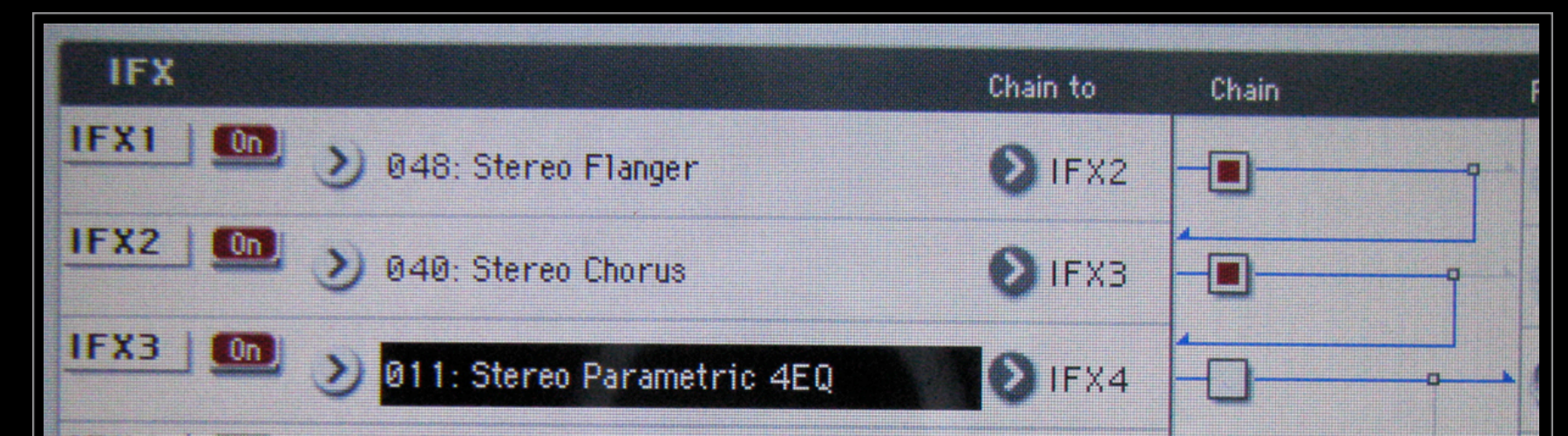


Figure 1.

4. Beauty Pass - Kronosification

Adding
Kronos
Effects

22. Select the **IFX 1-12** tab and then the **IFX1** tab.

23. Copy the settings according to the picture in figure 2.

The manual writes: *“This effect gives a significant swell and movement of pitch to the sound. It is more effective when applied to a sound with a lot of harmonics.”*

And that’s good, because the ring modulation of **VCO 2** creates a lot of harmonics.

More information on the Stereo Flanger can be found on page 934 of the *Kronos Parameter Guide*.

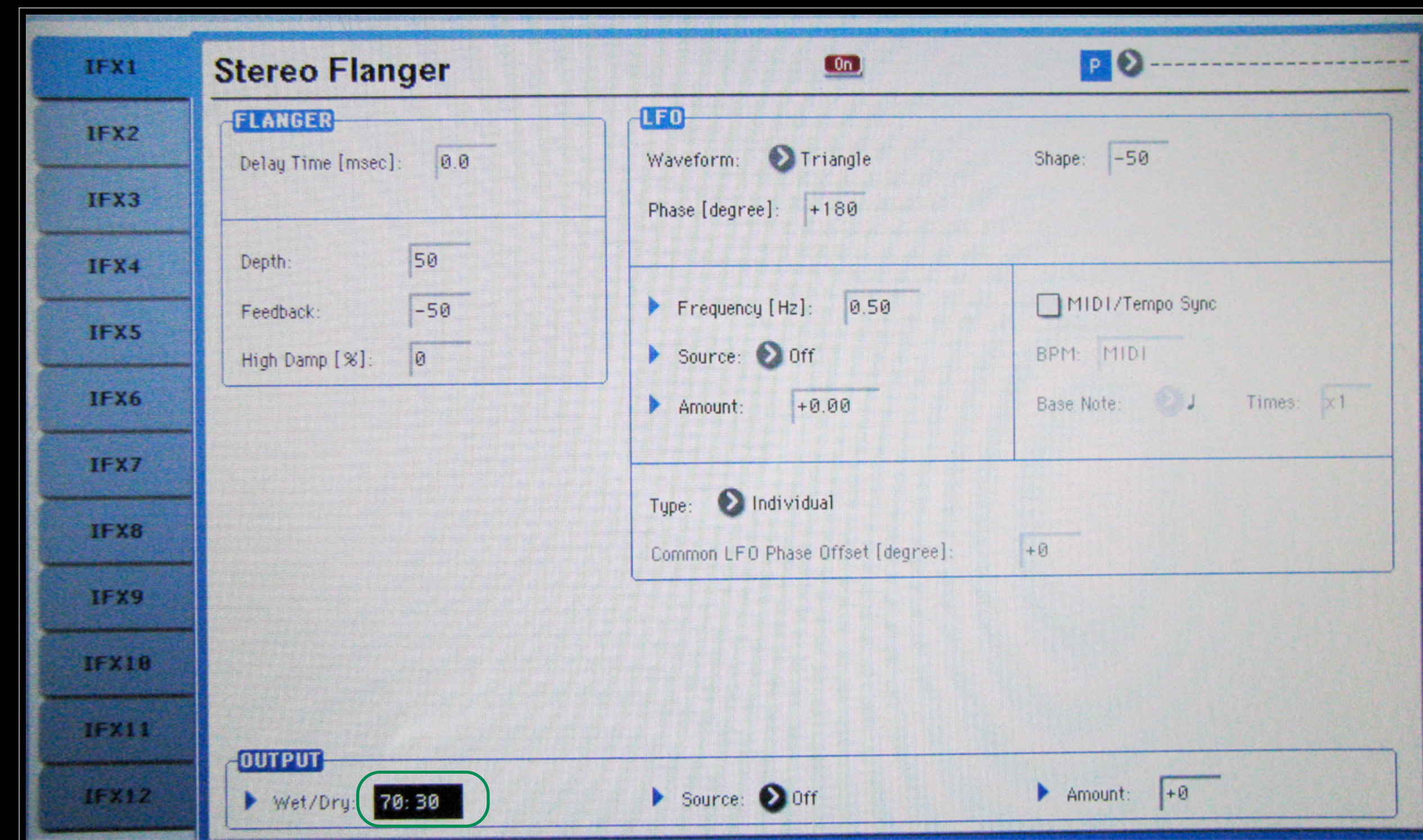


Figure 2.

4. Beauty Pass - Kronosification

Adding
Kronos
Effects

24. Select the the **IFX2** tab.

25. The picture in figure 3 shows the default values, which you'll use.

The manual writes: *"This effect adds thickness and warmth to the sound by modulating the delay time of the input signal. You can add spread to the sound by offsetting the phase of the left and right LFOs from each other."*

This thickness is what you want.

More information on the Stereo Chorus can be found on page 927 of the *Kronos Parameter Guide*.

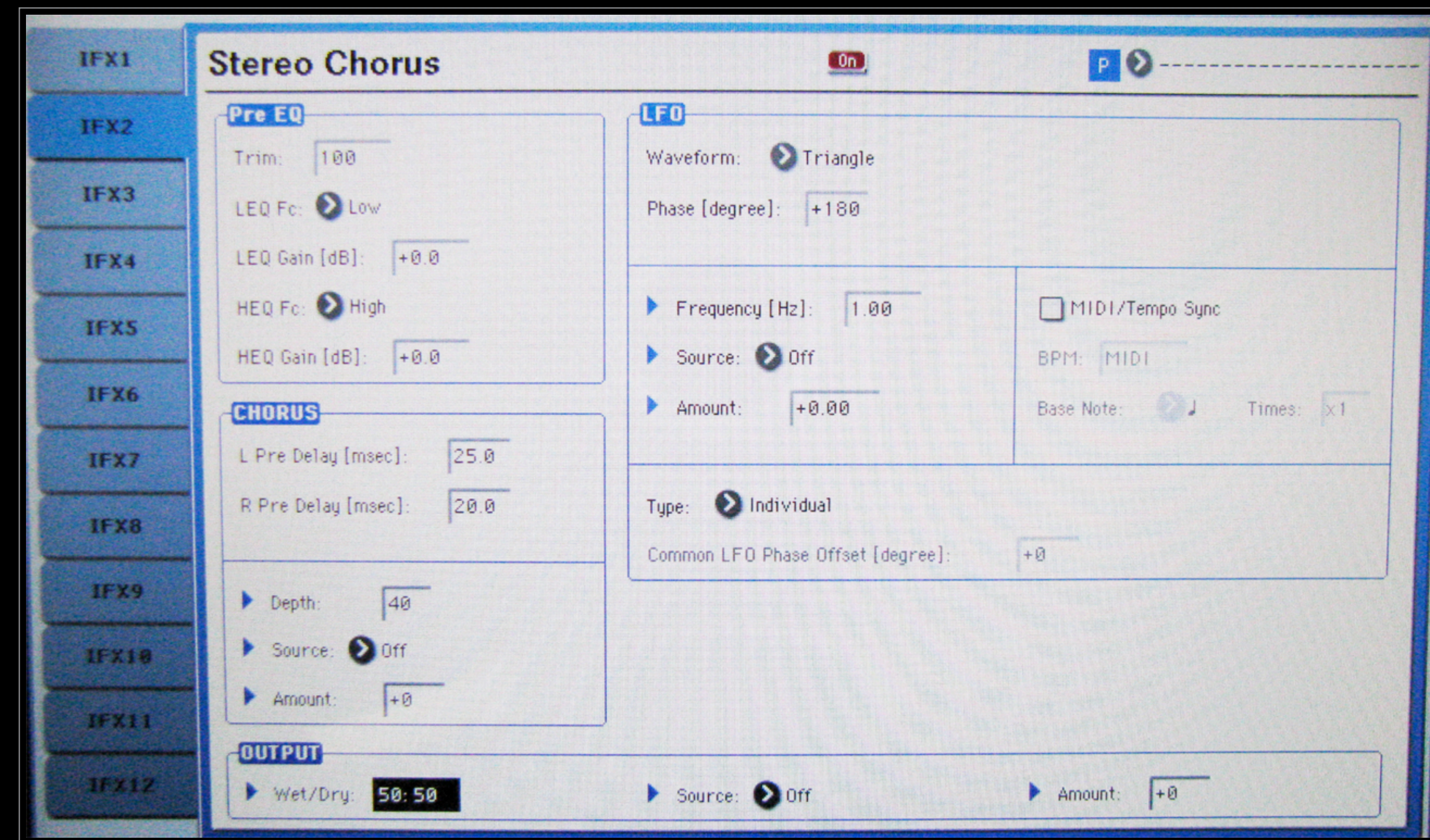


Figure 3.

4. Beauty Pass - Kronosification

Adding
Kronos
Effects

26. Select the the IFX3 tab.

27. Copy the settings according to the picture in figure 4.

The manual writes: *“This is a stereo 4-band parametric equalizer. Bands 1 and 4 can be set to either peaking or shelving modes, and you can modulate the gain of Band 2 in real-time.”*

This will boost the sound even more. You can try other settings, of course.

More information on the Stereo Parametric 4EQ can be found on page 902 of the *Kronos Parameter Guide*.



Figure 4.

4. Beauty Pass - Kronosification

Make the effects do their job:

28. Select the **Routing** subtab.

29. In the **Bus Select (IFX/Indiv.Out Assign)** section set **EXi 1&2** to: **IFX1**.

Make sure you'll save these changes!

30. Select the **Play** tab. Select on the **Main** menu (top right on screen) **Write Program** to save your program. Also see points 5 - 7 of this tutorial.

Make Effects
Work

Save Changes!

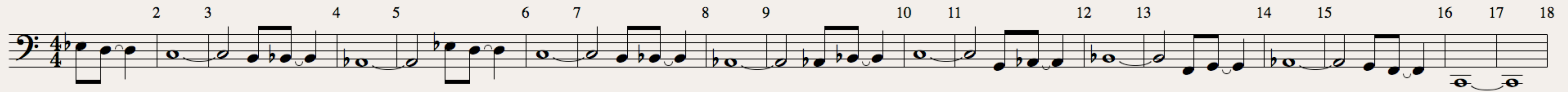
For more information, please see the *KRONOS Quick Start Guide* at 'Saving your edits' on page 24.

When you switch between programs without saving your changes first, they will be lost.

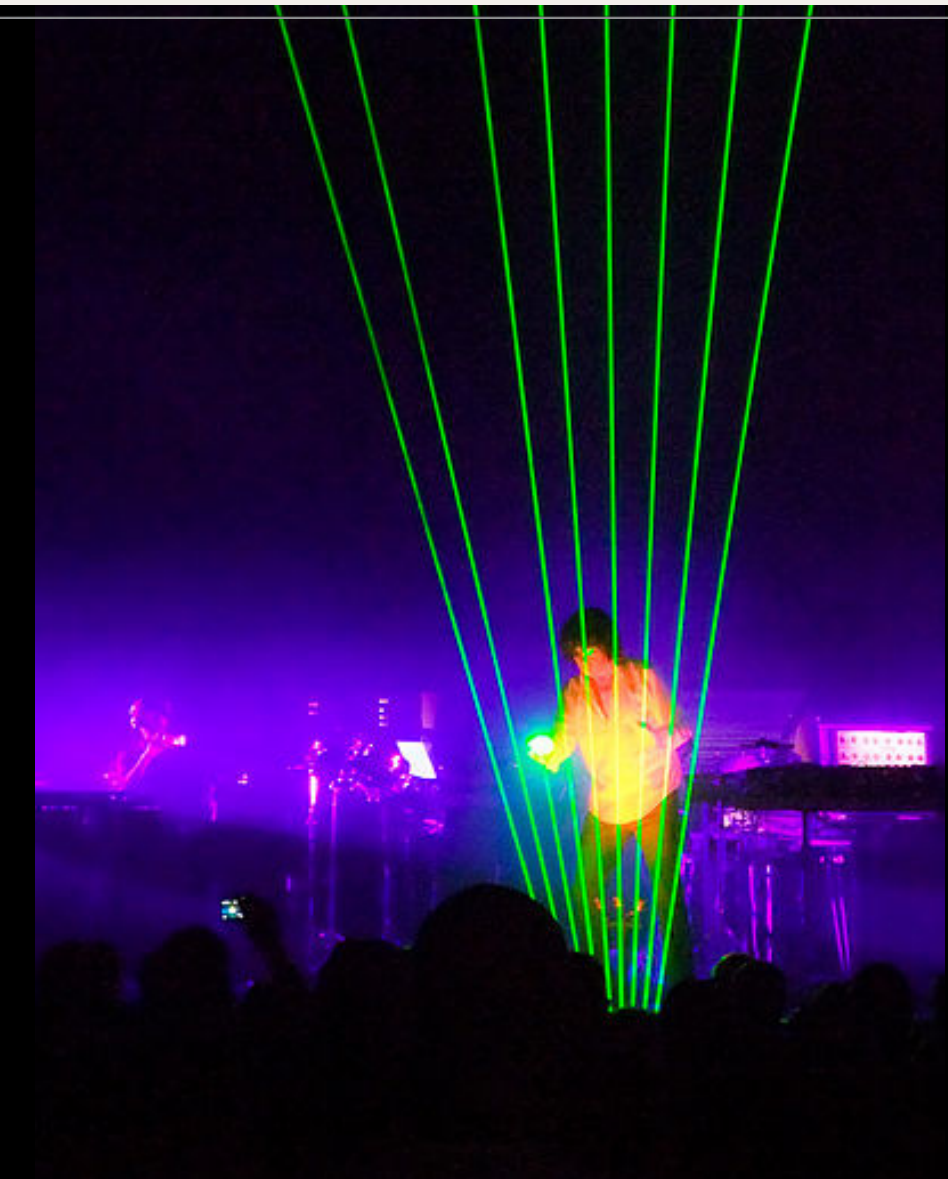
5. Time to try the Beast

Play time

After a lot of programming, it's time to try the Laser Harp. Just play the notes below.



I'm sure you're feeling completely Jarrie ;)



Source: wikipedia.

6. Sliding your Finger - External Modulation Source

Say, you want to shape the punch of the Laser Harp using the **ribbon** of your Kronos.

The Ribbon

31. Select the Laser Harp program (sound). Select the **EXi 2** tab, select the **MG, EG, & Mod** tab and of **EXTERNAL MODULATION SCR 1** select: **> Ribbon (16)**.

32. Set **LPF CUTOFF = +2**, **VCO 1 PULSE WIDTH = +2**, and **AMP = +4**. These changes will be applied when you touch/slide the **ribbon**.

feel free to try
other settings...

Play some notes and touch/slide the **ribbon** with your finger (arbitrary one) at the right side and then move it slowly to the left side...and back to the right side. Or, play a note while sliding your finger quickly left-right-left...

Shaping sound with
your finger.

Cool, what!?

Time to go to tutorial 4 - Creating a Combi with 4 tracks and play JMJ's Rendezvous II part 3!

7. Unleash the Beast...

More Power!!!

After playing with this ribbon thing, you probably have the same idea as I did while playing it for a while...
Why not making this the standard, even more powerful, Laser Harp sound!

33. Select the **EXi 1 > Osc & Filter** tab. Set of the **VCO MIXER**: **VCO 1 LEVEL = 9**, **VCO 2 LEVEL = 8**. Of the **VCLF** set **CUTOFF FREQUENCY = 5.5**, and its **EG 2/EXT = 9**. We 'darkened' it a bit.

Tweaking the sound

34. Select the **Patch Panel** tab. Set the **Volume = 7**.

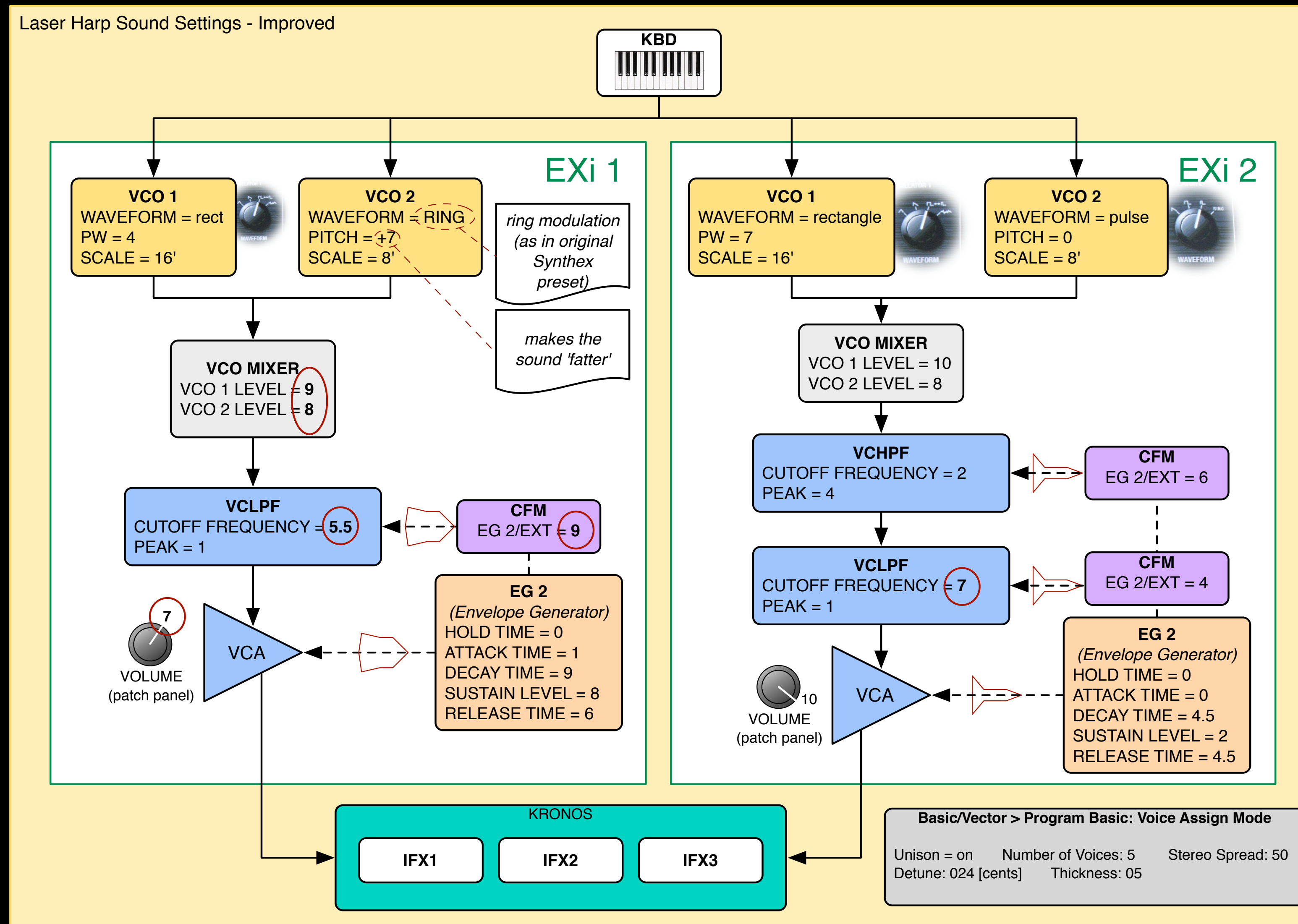
35. Select the **EXi 2 > Osc & Filter** tab. Of the **VCLF** set **CUTOFF FREQUENCY = 7**.
It has a sharper punch now.

36. Don't forget to save your sound (program).

See summary settings schema on the next slide.

This is real life. Every time you listen to the sound, you can tweak it to make it a little better. It's like a painting, never finished.

Settings of JMJ Laser Harp for MS-20EX



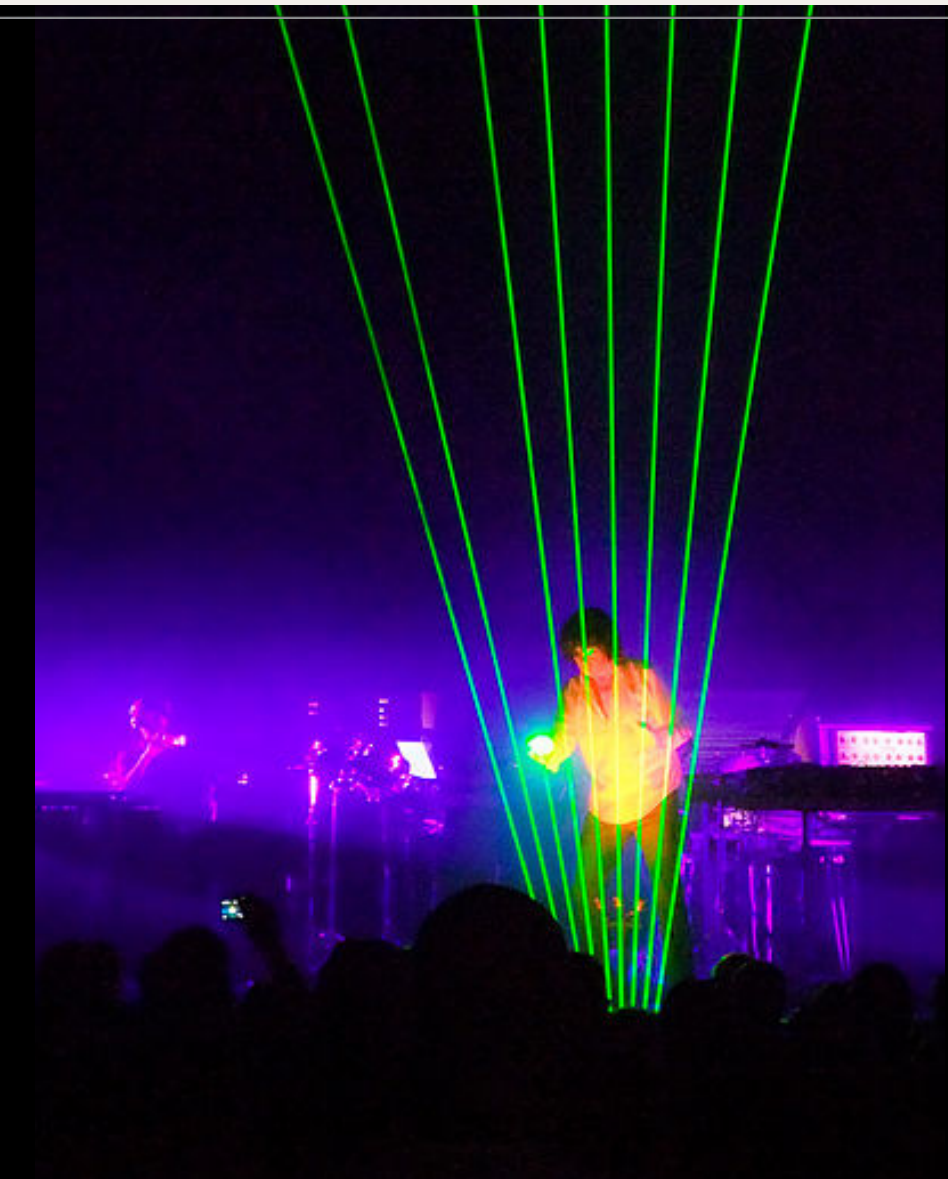
Time to try the Beast...again



After a lot of programming, it's time to try the Laser Harp. Just play the notes below.



I'm sure you're feeling even more Jarrie now ;-)



Source: wikipedia.

Sources used for this Tutorial

Source	Link
Laser Harp Wiki	http://en.wikipedia.org/wiki/Laser_harp
Elka Synthex - original Laser Harp sound	http://www.youtube.com/watch?v=zLOq-BUtiFQ
Elka Synthex Wiki	http://en.wikipedia.org/wiki/Elka_Synthex
Laser Harp on Korg M3 (karma-lab)	http://karma-lab.wikidot.com/korg-m3:programming-a-laser-harp
Dan Stesco JMJ Pack	http://www.karma-lab.com/forum/showthread.php?t=19253