



## Using the KARMA Function as a Simple Arpeggiator Part 2 – Polyphonic Arpeggiations (Containing Chords)

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This tutorial is a continuation of “**Part 1 – Monophonic Arpeggiations**,” so it is assumed you have already gone through that one and understand some of the concepts.

Most of the 32 Arp Models in the first 32 GEs are set to generate a single note at a time. However, there are a few that generate chords with each step, having “Poly” in the name.

- 1) Let’s select a synth program. Follow along and select **Program A066: Wild Arp +/- Y**.
- 2) Go to 6.1-1 [Setup]. Press [F8] UTILITY and select “Init KARMA Module,” check the [X] KARMA RT&Panel Setting box, and press [F8] OK. This removes any front panel connections to the parameters that might interfere with our experiments.
- 3) Now, make sure **GE 0028 Arp Model 09 Poly** is selected in the GE Select field. (This program already uses it, but we have initialized it, so make sure.)
- 4) Turn on the KARMA On/Off switch, and play a 4 note chord in the octave below middle C. You will hear a bouncy arpeggio pattern going up and then down, over about a 3 octave range, that contains some chords inside it. If you let go, it stops. Turn on the Latch Switch of the KARMA function. Now you can release the keys and have the arpeggio continue while we experiment.
- 5) The main differences between this Arp Model and GE 0000 that we described in Part 1 are the substitution of a few parameters that control “Clusters.” In KARMA terminology, a “Cluster” is a group of notes that are generated at the same time (i.e. a chord). KARMA has Cluster Patterns that control which steps of the phrase will generate more than one note at a time. The clustering characteristics of this Arp Model are controlled by GE Parameters 09: Index: Cluster Mode [B] and 12: Cluster: Template [B].
- 6) It’s useful to set 02: Rhythm: Straight/Trip Mults to “6” or even “8” before continuing with these experiments, so that the rhythm of the notes is slowed down and you can more fully analyze what is being generated at each step (or use the Tempo Knob to slow it down).

The following table is a complete reference for all 16 parameters for this GE model. With GE 0028 loaded and initialized as described above, read the descriptions and experiment with each one as you do so – you’ll learn a lot!

Incidentally, all of the following GE parameter names and terminology are explained in the “KARMA GE Guide”, which is one of the manuals included with the keyboard (also available online at the KARMA Documents Page ([www.karma-lab.com/KARMA/KARMA\\_Docs.html](http://www.karma-lab.com/KARMA/KARMA_Docs.html)))

Of course, it’s not always easy to make the connection between the descriptions and the various ways they are set up inside the GEs, so that’s where you have to use a little brain power and experimentation!

**01: Rhythm: Swing %**

This applies a swing feel to the notes, from 0% (off) to 50% (triple) to 100% (all the way to half the current rhythm value, i.e. from a 16th to a 32nd.) Note that if the next parameter is set to produce triplets, it will have not effect on them.

**02: Rhythm: Straight/Trip Mults [B]**

This selects one of several “Rhythm Multiplier” settings to change the base resolution of the notes that are generated. By default, it comes up as “4”, which is 16th notes. The multiplier affects the internal Rhythm Pattern of the GE, which is set to all 16ths, so here’s the settings:

0: 25%	64th notes
1: 34%	32nd note triplets
2: 50%	32nd notes
3: 68%	16th note triplets
4: 100%	16th notes
5: 136%	8th note triplets
6: 200%	8th notes
7: 272%	Quarter triplets
8: 400%	Quarter notes
9: 544%	Half note triplets
10: 800%	Half notes

**03: Duration: Duration Value [B]**

This controls the durations of the notes, from 0 to 125%. 100% is “legato” (each note extends to the next note. Other settings are pretty obvious. A typical arpeggiator might call this control “gate time”.

**04: Velocity: Velocity Scale [B]**

Parameter 05 (the next one) selects one of several different Velocity Patterns, which subtract velocities from some of the notes. This one, Velocity Scale, sets a percentage for how much the pattern effects the actual note velocities. At “0” (0%), it has no effect at all and all the velocities come out at the same level. At “100” (100%), the pattern is applied according to its internal values. At higher values like 300~600%, you can actually make some notes drop out, getting different simpler patterns from the arps. Leave this set to something fairly obvious like “300” as we move to the next parameter.

**05: Velocity: Velocity Template [B]**

This chooses one of several completely different Velocity Patterns for the internal pattern grid, changing which notes are accented and which are lower in volume/brightness. Make sure GE Parm 04: Velocity Scale is set to something high like +0300 when you experiment with this one.

**06: Note Series: Inversion**

This controls a basic inversion for the notes. In other words, play a C Major triad (C – E – G), with the C on the bottom (root position). When Inversion is “0”, you get what you played. +1 would start the arpeggio from the E (first inversion), +2 would start the arpeggio from the G (second inversion), and so on. This can be useful when you put the same arp on more than one module – offset the inversions, and they will play “in harmony” with each other!

### **07: Note Series: Replications**

As explained previously, the notes you play are “replicated” across a number of octaves according to this setting. For this parameter, "100" is equal to one octave. "150" would be approximately an octave and a half, and "300" would be 3 octaves. Just play with this and you can easily constrain the notes to whatever range you prefer – you can even set it to “0” and get a single repeated note, which you can then apply velocity accents to using GE Parm 04 and 05 above.

Note that when used with Clusters, the random settings function a bit differently: When 09: Index: Cluster Mode is 0, the bottom note in a Cluster will be selected at random from the Note Series, and then the other notes in the Cluster will be adjacent indexes (limited by the highest note). When the Cluster Mode is 1, all notes in the Cluster will be selected at random from the Note Series, not necessarily being adjacent indexes. And therefore will be more spread out.

### **08: Index: Pattern Type [B]**

This switches the arp between a normal up/down type of pattern, and one of two different random variations:

0: Use the internal pattern (up/down)

1: Random – each note is played once at random based on 08: Replications

2: Random Walk – the notes will be played in a random fashion, starting at the top or bottom, and move randomly to the next note with a maximum jump of 2 notes (internally set). This can play very improvisational sounding patterns.

### **09: Index: Cluster Mode [B]**

This affects how the Clusters move from one step to the next:

0: Single – 1 step per Cluster

The bottom note of each cluster will be 1 index away from the previous Cluster in the Note Series. In other words, if the Note Series is C-E-G, the bottom note of Cluster 1 will be C, the bottom note of Cluster 2 will be E, etc. (assuming GE Parameter 14 was set to “Up”).

1: Multi – 1 step for each note in Cluster

The number of notes generated in the Cluster determines what the bottom note of the next Cluster will be. If the Note Series is C-E-G-C2-E2-G2 etc., and Cluster 1 is 3 notes (C-E-G), then Cluster 2 will start at C2 (3 notes away). The end result is that the Clusters seem to jump around more and move through the Note Series faster.

### **10. Env: Env On/Off [2]**

A GE can use up to three independent envelopes, each doing a different CC or modifying some parameter such as velocity. This one turns on Envelope #2, which is set internally to generate CC #02. (CC #02 is JS –Y, which can do different things on each Program. It’s equivalent to slowly moving the Joystick in the downward direction and back.) It will apply a “shape” to the overall filter setting, causing the sound to get brighter and darker over time as the GE generates notes. (Note that the “Voice Name List” can tell you which envelopes are generating which CC numbers – see page 10.)

Note that the actual functioning of the envelope is highly dependent on the Envelope Latch settings, which can be located on 6.2-2 [Parm2]. As you can see, at the moment Env2’s Latch setting is “Off”. Play a chord and hold it down – you should hear the sound get brighter and then slowly get darker. If you release the keys, the notes will continue because the Latch button is on, but the envelope itself is set to Latch “Off”, so it will simply go into its release portion, and stay there.

However, we can make the envelope “loop” over and over, by changing the Envelope Latch setting to “Rel2” – now it will play to its release portion, and then restart at the beginning, and loop over and over. You should now be able to hear the sound getting gradually brighter and darker continuously. To change the speed of the envelope, so it gets brighter/darker faster, skip ahead to the next parameter 11: Env: Time Scale[2]. If you set GE Parm 10: Env On/Off [2] to “0”, you’ve turned the envelope off and there is no JS -Y variation.

### 11. Env: Time Scale [2]

This controls an overall time value for the envelope, from 1 to 10 seconds. With the envelope looping as explained above, vary this and hear the difference with the faster settings.

### 12. Cluster: Template [B]

Selects one of 37 different Cluster Patterns that internally fill the Cluster Pattern grid (see the Karma GE Guide for more info on the pattern). The first 10 Templates create Clusters all of the same size, i.e. 3 notes at a time, 4 notes at a time, etc. The remaining Templates have clusters of varying sizes sprinkle with single notes as the pattern advances. Here are the Template Names, which cannot be seen in the keyboard, but can be viewed in KARMA MW Software (numbers in brackets indicate number of notes in the Cluster):

- 0: [1] 1 note at a time
- 1: [2] 2 notes at a time, etc.
- 2: [3]
- 3: [4]
- 4: [5]
- 5: [6]
- 6: [7]
- 7: [8]
- 8: [9]
- 9: [10]
- 10: [2 1] 2 notes, 1 note, alternating
- 11: [3 1] 3 notes, 1 note, alternating, etc.
- 12: [4 1]
- 13: [5 1]
- 14: [6 1]
- 15: [2 1 1 2 1 1 2 1]
- 16: [3 1 1 3 1 1 3 1]
- 17: [4 1 1 4 1 1 4 1]
- 18: [5 1 1 5 1 1 5 1]
- 19: [6 1 1 6 1 1 6 1]
- 20: [4 1 1 1]
- 21: [4 1 1 2]
- 22: [4 1 1 3]
- 23: [4 1 1 4]
- 24: [4 1 1 1 2 1 2 1]
- 25: [4 1 1 1 3 1 3 1]
- 26: [4 1 1 1 2 1 2]
- 27: [4 1 1 1 3 1 3]
- 28: [1 4 1 1 3 1 3 1]
- 29: [1 4 1 1 4 1 4 1 4 1 4 1 4 1 4]
- 30: [6 1 1 3 3 1 1 3 1 1 3 3 1 3]
- 31: [8 1 4 8 1 2 1 8 1 1 3 1 8 1 8]
- 32: Xplo 1 (32) [10 9 8 7 6 5 4 3 2 1]
- 33: Xplo 2 (16) [10 9 8 7 6 5 4 3 2 1 1 1 1 1 1]
- 34: Xplo 3 Rev (16) [1 1 1 1 1 1 1 2 3 4 5 6 7 8 9 10]
- 35: Valley [10 9 8 7 6 5 4 3 3 4 5 6 7 8 9 10]
- 36: Peak [ 1 2 3 4 5 6 7 8 8 7 6 5 4 3 2 1]

### 13. Phase: Length Mode

Selects one of three different modes for setting the length of the Up/Down portions of the phrase (Phases):

#### 0: As Played

The length of each Phase is based on the length of the Note Series, as controlled by 07: Note Series: Replications. The shorter the Note Series, the shorter each Up/Down Phase will be.

#### 1: Time Signature

Each Phase will be in 4/4 time signature (set internally in the GE). You can alter the overall Time Signature using the Time Signature parameter on [6.1-1]. When Set to "GE/TS", it uses the Time Signature internally set in the GE; or you can override it for other time signatures.

#### 2: Events

Each Phase will be 8 events (Notes or Clusters). The value of 8 is set internally in this GE.

### 14. Phase: Template Steps 1~4

With regards to typical arpeggiation, this is your "Up, Down, Up/Down and Down/Up" control.

0: Up

1: Down

2: Up/Down

3: Down/Up

### 15: CCs: Fixed/On [1]

Do you hear the panning that is moving the sound back and forth, left to right? That is being generated by this setting. (If you were to look in the Voice Name List, for GE 0000, we will see that CC-A is set to CC10, which is Panning).

The way the "Fixed" parameter works, is that if it is set to "128", it kicks in the pattern, while if it is set to any other value, that fixed value is sent out. Set it to "64" and the panning stops, with the sound in the center. "0" would be far left, while "127" is far right. Setting it to 128 kicks in the pattern again. The pattern itself is controlled by the next parameter, 16: CCs: Template.

### 16: CCs: Template [B]

This is set up to select one of 16 different patterns which start at "Left to Right Slow," get faster and faster, and eventually move into some patterns that flip back and forth with each note or group of notes. Here are the template names, which you cannot see inside the keyboard:

1: L <-> R Slow

2: L <-> R Med Slow

3: L <-> R Med

4: L <-> R Med Fast

5: L <-> R Fast

6: L <-> R Very Fast

7: L <-> R Really Fast

8: L <-> R Truly Fast

9: L <-> R Fastest

10: 1L, 1R (one note left, one note right)

11: 2L, 2R (two notes left, two notes right) etc.

12: 3L, 3R

13: 4L, 4R

14: 5L, 5R

15: 6L, 6R

16: 8L, 8R

Note that you can see these names and the templates themselves, using KARMA MW Software, on the GE Editor > CCs Panel.

One other thing to try (from our lesson in Part 1):

Some keyboard's arpegiators have a function named something like "Key Sync" that controls whether or not the arpeggio starts over every time you play notes or just continues from where it was. In KARMA, this is named "Note Trigger" and is found on UI page 6.2-2.

**Any:** Every note-on will cause the phrase or pattern to restart from the beginning.

**AKR: (1st After Key Release)** Triggering will occur when the first note-on occurs from a state in which no keys are "on." Triggering will not occur if even one note is being pressed. By changing the chord you play on the keyboard while holding at least one note, you can control the phrase or pattern without triggering.

**1st: (1st Only Until Module Stops)** After KARMA function is turned on, only the first note-on will cause triggering. Subsequent note-ons will not cause triggering.

**Dyn: (Dynamic MIDI)** Triggering will be produced by operating the controller specified by Dynamic MIDI (6.4-3). In this case, note-ons will not cause triggering.

By now, you should be able to see that a single GE "Arp Model" is quite a powerful tool, allowing you to do most of what any other keyboard's arpeggiator will do. Have fun!