

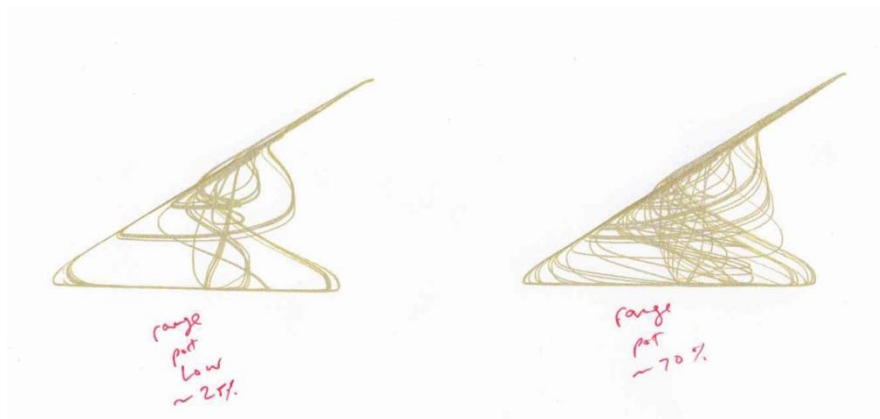
# nonlinear circuits

## Hyper Wien Chaos

### build notes version 1

27 Oct 2014

This is a simple circuit using coupled Wien Bridge oscillators, it can display limit cycles, chaotic and hyperchaotic waveforms, depending upon pot settings. It is very sensitive to component values, it is best to use 1% tolerance resistors and measure to find the ones closest to the given values. This module is probably best for people *really* interested in chaos as this is the only hyperchaos module available, functionally it is limited for synth use but it has its charm and quirks. I have included some plots to show the basic x-y signals obtained from this module. The core circuit is based on one published in 2008 by Q. Li and X.S. Yang, although it has been redesigned to cycle at approx. 1Hz and has a vactrol based CV sub-circuit.



**BOM** - let me know if I missed something!

component	quantity	
100k pot	2	<i>see notes</i>
50k pot	1	
TL074	1	DIP
BC547	2	any general NPN okay, pinout suits BC547
1N4148	3	any regular diode ok
<b>CAPS</b>		
10uF (25v or higher rating)	2	2.5mm pin spacing
100nF	3	2.5mm pin spacing for decoupling
100nF	2	thru-hole 4.5mm spacing
1uF	2	thru-hole 4.5mm spacing
3.5mm mono sockets	3	kobiconn type, Tayda has them
LED	1	
single vactrol	1	I used Silonex NS-32
10 pin power connector	1	
<b>thru-hole resistors</b>		
10R	2	
1k	2	

4k7	1	
22k	3	
30k	1	
100k	3	
240k	3	
680k	1	
1M2	3	
3M	1	
RL	1	choose value to suit LED

## NOTES

### Building

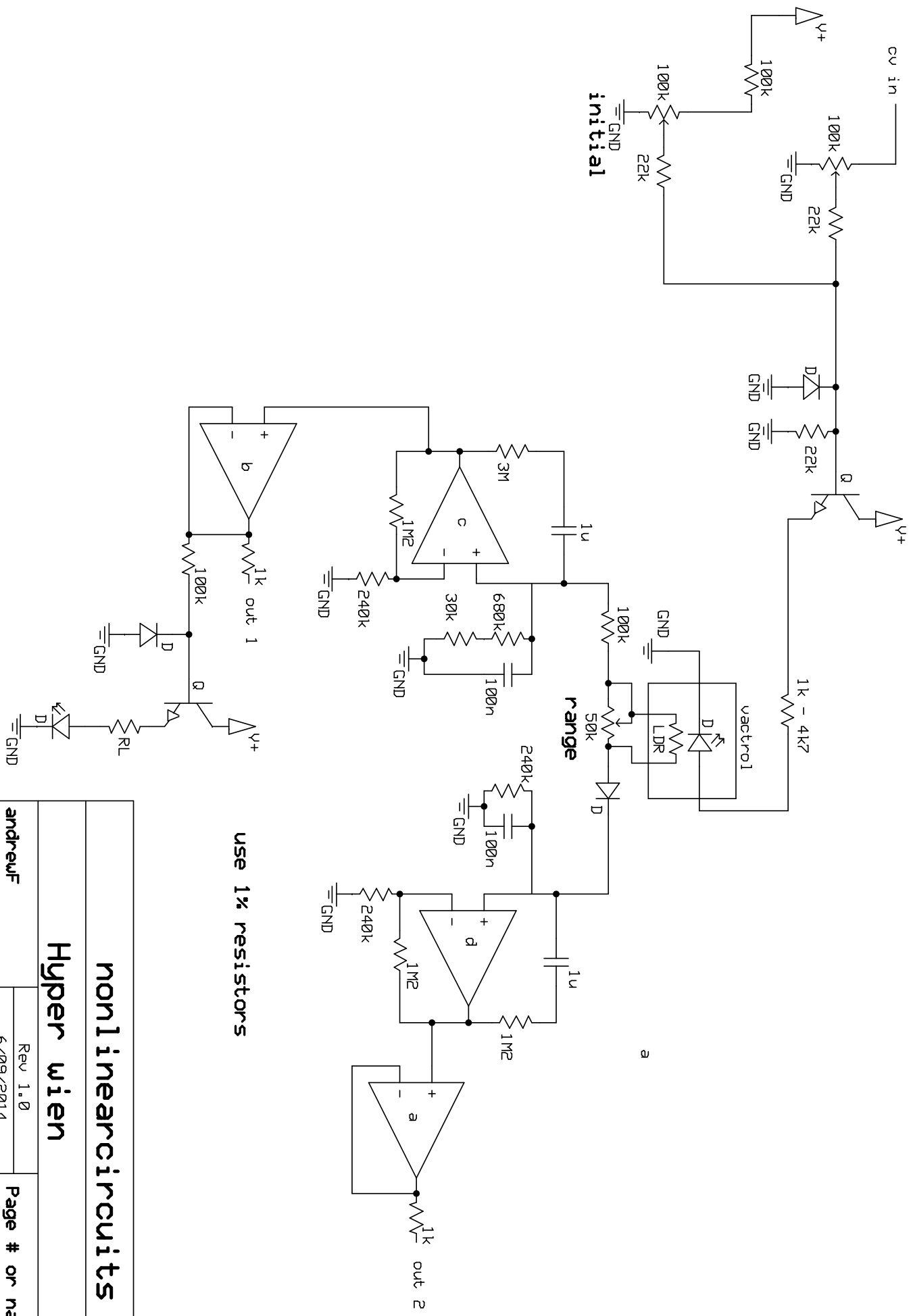
#### pots

These ones from Tayda will do, though be careful none of the metal flaps/tabs are sitting on PCB traces, trim them back if so. You can find many brands of this type of pot, Alpha make nice ones too.

<http://www.taydaelectronics.com/potentiometer-variable-resistors/rotary-potentiometer/linear/100k-ohm-linear-taper-potentiometer-round-shaft-pcb-9mm.html>



The pots, LEDs and sockets are supposed to be mounted on the back of the PCB, check my blog for pictures on how NLC eurorack modules should be put together.



use 1% resistors

<b>nonlinearcircuits</b>	
<b>Hyper wien</b>	
Rev 1.0	Page # or name
andrewf	6/09/2014