
 Ordinaire 24 archicembalo tuning
 Tempering the circle of fifths

In this archicembalo temperament, each circle of fifths in 1024-ed2 almost exactly approximates the interval sizes we would get by tempering the fifths in units of 1/20 Pythagorean comma. In John Brombaugh's system of Temperament Units (TU), where the Pythagorean comma at 531441/524288 or 23.460 cents is equal to 720 TU and the syntonic comma at 81/80 or 21.506 cents to almost precisely 660 TU, a 1024-ed2 step is equal to 35.965 TU, which for many purposes may be rounded to 36 TU or an even 1/20 Pythagorean comma.

The following diagram thus shows the tempering of each 12-note circle in rounded fractions of a Pythagorean comma and TU values, as well as the sizes of the fifths in 1024-ed2 steps to document the exact synthesizer tuning. The two 12-note circles are placed at 36.328 cents apart.

	+216	+216	-144	-144	-180	-144	-144	-144	-180	-144	-144	+216	
	+3/10	+3/10	-1/5	-1/5	-1/4	-1/5	-1/5	-1/5	-1/4	-1/5	-1/5	+3/10	
Eb	Bb	F	C	G	D	A	E	B	F#	C#	G#	D#/Eb	
	605	605	595	595	594	595	595	595	594	595	595	605	

594 steps of 1024 = 696.094 cents
 595 steps of 1024 = 697.266 cents
 605 steps of 1024 = 708.984 cents

A curious feature of this scheme for each circle is that we have major thirds ranging in size from 6 at 387.891 cents, or 1.577 cents wide of a pure 5/4 (386.314 cents), to the two widest at 424.219 cents, a virtually just 23/18 (424.364 cents), narrow by only 0.146 cents.

In the full 24-note tuning, the DOG or Diversity of Gradations approach is realized through two main factors: the mixture of meantone and wide fifths within each 12 note circle; and the slightly unequal division of a meantone chromatic semitone at 78.516 cents into two diesis or fifhtone steps at 36.328 cents (the spacing between circles) and 42.188 cents, a difference of 5.859 cents (5 steps of 1024-ed2), or almost precisely 1/4 Pythagorean comma. A third and smaller factor is the limited resolution or granularity of 1024-ed2, which requires a slightly unequal temperament of the meantone fifths in order to obtain the desired average size, and thus another minor source of increased "muttly" variety according well with the DOG ideal.

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