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STEAP works with two frequencies, the clock divided by 4 (ABCB) (f1) which controls the mosfet switch sequence, and the core AB capacitance C with the $a_2 + c_2$ inductance L (f2). Their relation is what makes STEAP “tick”.

This relation is for “example” a clock of 100kHz divided by 4 giving a frequency of 25kHz (f1), and a LC inductance $a_2 + c_2$ and core capacitance AB giving a frequency of 16.406kHz (f2). This core capacitance will be very low in relation to the build capacitance, this means an external high quality capacitor is place in parallel with the core AB capacitance increasing this capacitance. This is not easy to do due to capacitor standard sizing. The alternative is to use standard size capacitors such as 5, 10, 20uF high voltage capacitors as used in the audio industry, to be somewhere close, and then adjust the clock frequency so as to obtain the right f1 f2 frequency mix that is required to give the highest possible output voltage.

It must be remembered that there are ONLY 3 switches, but B switches twice in the sequence, B is taken from “one supply” and A & C both from a “second supply”. This will be explained later, because they are really the same DC supply but out of phase caused by the internal frequencies f1 and f2.

The above frequencies that I have given, were based on the audio frequency used in digital audio, 7.1825kHz especially video audio.

$7.8125 \times 2.1 = 16.40625\text{kHz}$, a flip flop of 32.768kHz is close enough, $16.384\text{kHz} @ 7.83 \times 2.1 = 16.406\text{kHz}$

$7.8125 \times 3.2 = 25\text{kHz}$. @ $7.83 \times 3.2 = 25.056\text{kHz}$.

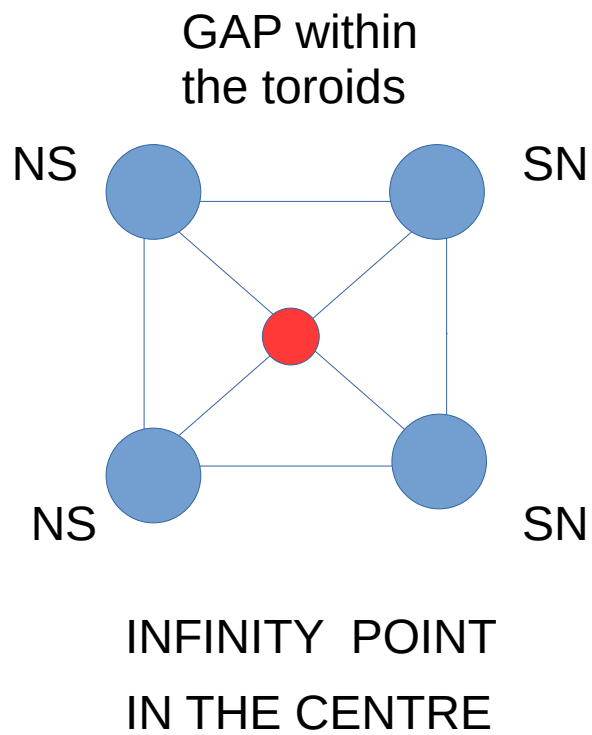
Note how close this is to $7.83\text{Hz} \times 1000$.

The 2.1 and 3.2 forms the MSWR (**magnetic** standing wave ratio) of, $25/16.40625 = \mathbf{1.52381:1}$.

A 1.5:1 ratio is not good at all, it must never be exact or catastrophic break down will occur. Here we want a forward and reverse magnetic wave where NN and SS fields collide and amplify, and **change positions continually. The unit vibrates, like the armature of a bell but in 4 directions.**

The area of “control”, to use a word as this is difficult to explain, is within the gap of the two toroids. A picture is better than a thousand words, and is shown below. This can be looked at as the centre point being a record player stylus which moves within the groove of a record, and in turn generates a magnetic field within a coil which is then amplified.

Within STEAP a feed back as created similar to a microphone and loud speaker, a louder and louder squeal the closer the microphone is to that speaker.



That red dot in the centre is what moves, it is like the stylus within a record groove. This in turn affects the magnetic field within the coils.