Pi Music is Ten Notes Music Based on the Sequence of Value and 9 Decimals Series of π.

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Abstract: Pi (π) is a mathematical constant discovered by Archimedes in Greece in 320 BC. Pi (π) is a very important and useful number in mathematics, Science and Engineering. In an spherical the circumference divided by diameter is a constant called Pi its value is 3.1415926535…. These numbers are used In an octave , an adjacent notes have frequencies as a notes and lyrics obtained from this is called Pi music. Construction , problems and application of Pi (π) music is studied in this paper and Pi music box is discussed along with mythology of Pi Music android application and Pi Music orchestra companies.

Keywords: Pi Music, Ten Notes Music, Archimedes sheet music, Pi music box, Android application of Pi Music. Pi Music Orchestra

INTRODUCTION

Archimedes of Syracuse **Greece** (287-212 BC), one of the renowned mathematicians of history, calculated π for the first time **pi.**Archimedes calculated pi by drawing polygons within and around a circle.Pi is also known as Archimedes' constant. William Jones, a British mathematician, developed the Greek sign π in 1706. Pi is a ratio of a circle's circumference to its diameter .The value of pi is approximately 3.14, or 22/7.N To 39 decimal places, pi is 3.14285714265358979323846264338327950288419 7.[1-4]

π is an irrational number and therefore cannot be expressed as a common fraction. In a circle, Circumference divided by diameter is Pi. Since Pi is universal constant , therefore, The periphery of sound wave will increase with the increase if distance but the intensity (amplitude, A) decrease with distance (D) such that $A \alpha 1/ D^2$. This applies for physical and occasional sound but some continuous sounds like river flow at fall. In cosmic science, the String theory is never fluctuate in very nano particles. .22/7π { pi) law is also have a place in Music. So sound wave scatter in all angles making spherical ballooning... Assume a bird cuckoo is cooking on a branch of Mango tree and its Sound source will be center of spherical moving of waves : if time relates to frequency , Time will also with the increasing diameter (7) with the incensement of circumference of spherical waves.Every where Music Cosmopolitan. Wheather perception yes or non. String theory is from metaphysical music to galaxies sound..Geo music accelerate at seismic damage.Caught this music by signals geo electro magnet. Fluctuation change is music..if no, it is tune. [5-8]But in the instrumental and vocal music , Based on Fibonacci sequence is Phi Music and Based on the sequence of digits of the value of Pi , is Pi music. Both music are well defined, observed and applied in Orchestra. Adjacent Notes frequencies ratio f2 : f1, is called Phi(ϕ), the Ratio, r = f2/ f1. It is an interval, or interval ratio, determined by the frequencies f1 and f2. Thus each r ∈ R + gives a unique interval.

It is an enlightening exercise to listen to the intervals determined by various ratios r, such as 3, 3/2, √ 2, 0.7, and even the transcendental numbers π ≈ 3. 14159 . π ≠ Φ, ∴ Pi= 3.142… ˙ Φ = 1.618… => π ≈ 2 Φ . => π ≈ 2 Φ . ∴ 1.618 x 2 = 3. 236, ˙ 3. 236- 3.142 = 0.094 ˙ 2 Φ / π = 3. 236 / 3.142 =1.029 , 0.094 is negligible value and the ratio 1.094 is ≈ 1.0, ∴ 3. 236-≈ 3.142. π ·Φ, both are natural constants have same nature of number . i.e. not to be accurate divided.One can follow pi music and make double to phi music. And the differences of the frequencies could adjust with power of operate. Although it is negligible...or antimata to reverse of lyrics (notes) or rithm (beats). One musician must aware to be not monotonous. It applies for dances. Although karma Suwa shailaa are mono tonous dances. But variety makes music lovely. There four double quadraple octople and sixteen multiple are played in nature in activities and in geodiversity. Like sounds of seismicity, rain , cloud drumming , electring lightening ghust of wind and the song of birds. [9-10]

Banjo is the perfect for pi music, jump dance of thumka in in Mridangam,When at rainy months cloud drums in trital pure classical but electric lightening:"Tataaddaak td td tad.≡1,3,5,3,..2,1, -2,1, 2,1. 2.1.....Gradually retardation of sound intensity from highest sound with teravolts electricity..Phi music and pi music deer music at play jump music to classical dance and natural languages both music and mathematics .Some mathematician views set theory, Sine theta , cos theta, logarithm, wave theory, acoustics, phi music and pi musics.The idea for learners is practice on tabla and also Harmonium is simplest instrument to matching the sound. So problem is the song and music party.. now the wave sites of classical musics and mathematical musics are available, ≡which are ditto set theory. But practice makes perfect applying cell phone. [11]

Prayer Music have classical Lyrics (tarz') and rithm (tal) Example gratia is Tribal temple tall : "Tom.....Dha dhum dhoom (10) , Change Stanza...3." Dha4 Dhaa. " to "Taka naakaa ghoom. ghoooom. ≡ Chhaka chhaka chham chham." If it is changed to Phi Music 3 . 5 2.,3 3,2,3." ≡. Tadaad dheem Tonga.." and Pi music: 3.142≡, taakitad – Takitad..[12] Professor Jill Hardin Wilson is recognized first pi musician ,using the randomness of pi's digits relates to the normal numbers. He used Six individual voices, each corresponding to an integral multiple of pi. do to coax something musical sounding out of irrational numbers. After setting up some basic parameters, I would simply serve as "conductor." For this piece there are six voices. For each instrument, the notes, durations, and note volumes are all dictated by pi. Each voice corresponds to an integer multiple of pi (1pi through 6pi). [13] Andrew Boyd, (2015). Accessed the digits 0 through 9 were assigned to notes in the A harmonic minor scale as shown Figure1. It goes on forever without getting stuck in a repeating sequence of digits. Thus , each digit in pi to a key on the piano keyboard, middle C, "2" to C sharp, and so on…[14-15]

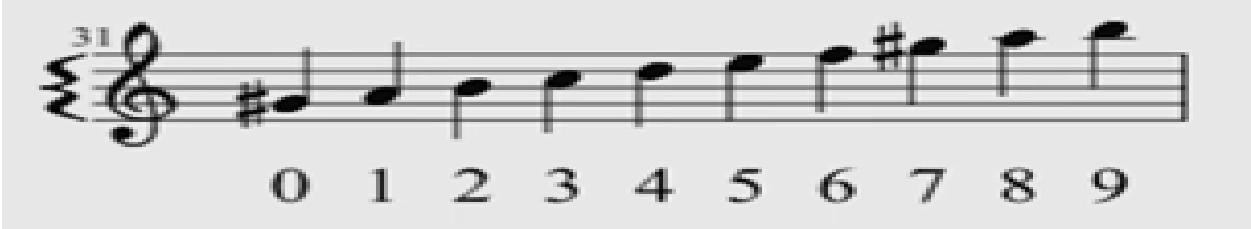

Figure1 Ten Notes Octave in Pi music (reference-16)

For playing Pi music, Mathematically need to break down music notes in to ten Parts as in Figure1 is represented. For example, if D note above middle C would be 261 + 32.75 = 293.75 HZ. Middle C (C4) on the piano comes in at a lovely 261 Hz. The C one octave above (C5) registers at 523 Hz. If we want to calculate the approximate frequency between notes, applying the formula: (523-261) / 10 = 26.2 hertz between notes. [16] . Ten notes music can be sad Pi Music. 10 = 2 x 5, hence 10 is approximated by the composition of the octave with the two-octaves-plus-a-third interval, yielding three octaves and a third, and having the same error as the approximation of 5 (since 2 is rendered exactly), which is about 14 cents sharp [17]

Pi MUSIC BOX: Pi Music Box is an light visualizations of Pi Music on the screen in Royal music exhibition. Lars Erickson composed the **Pi Symphony** in 1990. Customarily, playing a melody haphazardly would hardly be magnum opus. As random as the digits in π may seem, the melody that was composed out of it sounded as majestic as a symphony, Also, David Macdonald provides a diverse angle into the world of π. The π music, with the added harmonics played by the left hand, somehow conceals the randomness of π. The poignant piece seems to coerce its listeners to discover a faraway mythical spot in their minds. Many other Musicians too, e.g. Michael John Blakeand Samba, contributed in visualization of Pi Music [18,19].

PROBLEM WITH PI MUSIC: Pi music is always an exercise in composition, not discovery. I like my way of doing it, which is to compose durations for the notes that make musical sense. So you have E, C F C G d, D, A-G-E-G..., c, d B d, E D E..., c F A, D A F, E, E, c..., where hopefully the rhythms are clear. The tempo here is a maestoso of some sort. This is as many digits of π as I remember, because I haven't figured out how to organize the subsequent digits into a nice melody. A thought: $E♭_4$ is approximately 100π Hz, so any song based around E♭ could conceivably be considered pi music - for example, Bach's Prelude and Fugue in E♭ Major[20-22]

APPLICATION IN ANDROID: Now, in the internet and mobile phone time, one can visit wave site and have desired music on android. E.g http://musicbox.local wave site gives local music. In this application there is a browser for accessing Pi Music. Most OS X/iOS and Windows devices could need to install any one of Apple, Bonjour, iTunes, Linux, Avahi ,Samba, Winbind on Windows. The IP-address is printed on the screen when Pi Music Box is started.

Going through IP adreess a Configuration of settings. If settings are made perfect the Music Box will auto detect usb audio cards/speakers/boxes and hdmi. It's possible to override this in the settings. For example if you want to use analog out while having hdmi connected. Detailed instructions can be found in the manuals of the application.[23-25]
MUSIC SYMBOL: Since mathematics is formulated in symbols Therefore mathematical discussion of Music requires music symbols. Generally, Harmonium, key board, Pipe organ, Tambala, Pad etc musical instruments are symbolized by its mini figures. But some significant symbol is represented in figure1. The wave site of music symbol help to provide idea to apply symbol for description of music.[26]

Table1: Music Symbol and their Meanings:

Srl. N.	Symbol	Musical meaning	Imoji meaniing
1	♩	Quarter Note	Good
2	♪	Eighth Note	Solo music
3	♫	Beamed 8th Note	listening Happy music
4	♬	Beamed Sixteenth Notes	Music Party
5	♭	Flat note	Hopefull
6	♮	Natural Music	Praise Music
7	#	Sharp note	Struggle
8	𝄞	Strings Musical Instrument	Music company Logo
9		Mi cro hone	Declaration
10		Radio Signal	Broadcast

FURTHER SCOPE OF π MUSIC: Music is language of nature and mathematics is the method of the nature. F(N)={ Music ^ maths} => F= Function ≡ physics. There fore , there is further study and application to construct and observe pi music. Payeeee. Museeeeck ≡ Shree Radheyeeee.
: 1-3.... 1-3. ≈ shriRadhe.....jai shri krishna bolo jai radhe.
Tadaaak dhin tinzaaa. taddaaak dhin dha..
1 5 3. 3. 5 3. 3 5 3. 2 3 .1...
Jjai shrikrishna bolo radhe radhe.
1, 3 1 545 :;; 43. 32 21.
For tune ditto as rithm ,best is Mridangam than knoll than tabala than tomtom than duff than dumb bel than table. The instrumentation is also status but sinplest like basuri ektara tamoora (Indian tristringe),a Tin box is fixed a wire" dabka" instrument is ready for tribal music lovers. Ustad Gattu Mahara and Harmonist Kalka Gupta could talk if music with any article like bronze plate of meal. In this way the music is way of interest, love for practice.

Philosophically Pi and. Phi both music are natural phenomenon and mathematically pi is equal to double to phi. It employs to be similarity among both music. Both are a view of perception of the music. But, development of creation and visualization of phi music and pi music. There are Royal Orchestra Companies performing programs of Phi Music Box and Phi Music Box in their light and sound program. [27,28]

The discovery of pi is about three hundred BC. The Saamved is told to be Indian epic of music, Gandharwa means musicians and ancient Indian Emperors, In Indian octave ,Third note ‘Ga’ is given name upon them. Shri Krishna is depicted with pipe organ, and Samudragupta, is depicted with Weeda (7- Strings) but they are absent in literature. But in mathematical literature Musician Pittacora of greece invented octave in about 250BC .and Pittacora (Pythagoras) made an octave of 16 notes double octave(8x2=16) and He made a table of 16x16 blocks of both x and y dimensions. That Pythagorean table is called **Labdoma**. Double octaves employ a melody based on an alternate scale, mathematical properties and ratios of musical intervals convinced the music of the human human psyche. Consequently, certain rhythms, scales, and songs were used to heal the body and soothe the passions. The Pythagoreans were said to have musical exercises for sleeping and waking. Later, Plato, influenced by the Pythagorean doctrine of universal number, would take up this concept and make it into a science, prescribing musical modes for warriors, women, and various illnesses and passions[29-31].

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DECLARATION: I firmly declare that the content used in this paper from external sources is properly cited in references. And for any liability regarding plagiarism would be my responsibility.

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