

**INTERNATIONAL JOURNAL OF  
HERITAGE, ART AND MULTIMEDIA  
(IJHAM)**[www.ijham.com](http://www.ijham.com)**MICROTONAL TECHNIQUES IN CONTEMPORARY ZHENG  
COMPOSITIONS: NEW TECHNIQUES AND SOUNDSCAPES**Zhang Zhan<sup>1\*</sup>, Lee Chie Tsang Isaiah<sup>2</sup><sup>1</sup> Academy of Arts and Creative Technology (ACT), University Malaysia Sabah, Malaysia.

School of Arts, Ankang University

Email: 348259049@qq.com

<sup>2</sup> Academy of Arts and Creative Technology (ACT), University Malaysia Sabah, Malaysia.

Email: chie\_tsang@ums.edu.my

\* Corresponding Author

**Article Info:****Article history:**

Received date: 30.07.2024

Revised date: 12.08.2024

Accepted date: 25.09.2024

Published date: 30.09.2024

**To cite this document:**

Zhang, Z., & Lee, C. T. I. (2024).  
Microtonal Techniques In  
Contemporary Zheng Compositions:  
New Techniques And Soundscapes.  
*International Journal of Heritage, Art  
and Multimedia*, 7 (22), 54-72.

**DOI:** 10.35631/IJHAM.722005.This work is licensed under [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/)**Abstract:**

Microtones are becoming increasingly prevalent in contemporary zheng signaling a significant shift in the instrument's musical landscape. This trend is exemplified in five seminal works by Tang Jianping, Qin Wenchen, Zhu Lin, and Chaoming Tung, revealing how specific microtonal techniques redefine the expressive and technical parameters of this traditional Chinese plucked instrument. Unconventional tunings that deviate from the traditional pentatonic scale, alongside left-hand ornamentation such as pitch bending and sliding, and expanded timbral palettes utilizing harmonics and non-standard playing techniques, are central to this transformation. These techniques not only unlock new sonic landscapes but also imbue zheng music with nuanced emotional expression and melodic complexity, thereby transcending the limitations of traditional pentatonicism and equal temperament. The resulting musical language, imbued with microtonal inflections, resonates with contemporary aesthetic sensibilities while expanding the boundaries of traditional Chinese musical expression.

**Keywords:**

Contemporary Compositions, Microtones, Zheng

**Introduction**

The rise of microtone in modern zheng music is reshaping the instrument's traditional sound, pushing boundaries beyond pentatonic scales and equal temperament. This shift can be seen in compositions by Tang Jianping, Qin Wenchen, Zhu Lin, and Chaoming Tung, where

microtonal techniques redefine how this Chinese plucked zither is played and expressed. These methods involve unique tunings that deviate from the norm, ornamental left-hand techniques like pitch bending and sliding, and a wider range of sounds using harmonics and unconventional playing styles.

The zheng, part of the zither family, well-suited for exploring microtone due to its design and playing methods. Its long strings and customizable allow for producing non-standard pitches, while various techniques and playing positions open up diverse possibilities for microtonal exploration. This versatility has led to a surge in microtonal zheng compositions, since the early 2000s with composers influenced by diverse musical traditions at the forefront. These pieces now play a significant role in modern zheng repertoires, pushing boundaries in this musical genre.

While microtones have been used in various musical traditions for a long time, their application in modern zheng compositions raises intriguing questions about the changing landscape of Chinese musical expression and its interaction with global music trends.

This paper aims to delve into the use of microtonal techniques in key works to explore how they open up new sonic territories and imbue zheng music with subtle emotional depth and intricate melodies. The analysis focuses on excerpts from five pivotal microtonal pieces:

- 1) Tang Jianping. (2000). Ziming Series II (《自鸣系列 II》)
- 2) Qin Wenchen. (2011). Prayer Flags in the Wind (《吹响的经幡》)  
Qin Wenchen. (2011). Chorales in the Wind (《风中的圣咏》)
- 3) Zhu Lin. (2012). Jiang Zhou Ode (《江舟赋》)
- 4) Chaoming Tung. (2008). Lotusduft (《荷香》)

Through a detailed examination of these compositions, this research seeks to understand the specific microtonal methods employed and their impact on the overall musical experience. The study addresses the following inquiries:

1. How do contemporary zheng composers utilize microtonal techniques to broaden the instrument's sonic capabilities and emotional expressiveness?
2. What are the particular microtonal techniques used in these seminal works and how do they contribute to the overall musical atmosphere?
3. In examining the incorporation of microtones in modern zheng compositions, how does it reflect the growing trend of experimentation in Chinese music?

This research seeks to uncover the significance of microtones in contemporary zheng music and their impact on shaping the instrument's future.

## Literature Review

To establish a historical foundation for understanding the emergence of microtonality in Western music, foundational texts like Morgan's "Twentieth Century Music" (1991) and Yu's "General History of Western Music" (2005) trace the development of microtonality alongside new musical forms such as atonality, serialism, and spectralism in the 20th century, providing

a historical context for this research. Delving deeper into the theoretical underpinnings of microtonality, Narushima's exploration of Erv Wilson's microtonal tuning theories (2018) delves into intricate concepts like moments of symmetry (describe scales formed by a series of intervals that result in two intervals of differing sizes) and the scale tree (Wilson devised a numerical scheme to represent all moments of symmetry scales on an infinite, hierarchically ordered map of fractions), enriching our understanding of the diverse systems that have been developed to organize and utilize microtones in composition.

Expanding the historical perspective beyond Western music, Kirnbauer's investigation of early microtonal practices (2015) namely "*Vieltönigkeit*," refers to using multiple small intervals within the octave and exploring expressive and harmonic possibilities without strict theoretical codification (which differs from the later microtonality involves more structured and theoretical approaches), illuminates a broader historical context, highlighting the use of non-standard tunings and intervals in various musical traditions prior to the 20th century. In a similar vein, Geer's examination of microtonal practices in world music (2014) provides a comprehensive overview of contemporary approaches to microtonality across different cultures, demonstrating its global significance.

Complementing these historical and cultural insights, authoritative dictionaries like "The New Grove Dictionary of Music and Musicians" (Sadie & Tyrrell, 2001) offer definitions and discussions of microtonal concepts, particularly regarding pitch interpretation and practical application of microtones. This contributes further solidifying the theoretical foundation for this study by providing a standardized vocabulary and clarifying key terms.

In bridging the gap between Western and Chinese musical traditions, compositional analysis of microtonal works in Western music, as exemplified by Huang (2008) and Qian (2010). By analyzing a series of microtonal pieces, various compositional techniques like functional harmony and tonal thinking (applies in Ives's Three Quarter-tone Pieces for Piano), and theme-motif (means against the context of chromatic style, applies in Haba's String Quartet No.14) are interpreted, provides a Western-music-theory-based framework for understanding how microtones function within musical structures and contribute to aesthetic effects.

However, recognizing the unique cultural and musical context of the Chinese zheng, this study focuses specifically on this instrument, drawing upon research on its evolution and contemporary practices. To this end, theses by Zhao (2012), Xu (2018), and Lin (2022) examine modern composition zheng techniques. Zhao highlights how adding microtones within a semitone can refine the vocal parts and enrich melodies, creating a multi-dimensional sound centered on a single tone (2012); Xu outlined techniques such as linear microtonal fluidity, zheng's overlapping of microtonal scordatura tuning, discretization of microtone, and cluster of microtone used in Qin Wenchen's four orchestral works (2018); and Lin explores Qin Wenchen's zheng compositions, focusing on techniques such as microtonal scordatura tuning and uniform microtonal intervals between the left and right zheng parts (2022).

While Deng (2006) and Han (2013) provide insights into zheng performance practice and its cultural significance. Through using huayin (left-hand bending skills), Deng explore the evolution and continuity of modern zheng music, reexamining its transformation and reflecting on the aesthetic and philosophical meanings inherent in Chinese zheng musical culture amidst today's evolving tradition (2006), while Han investigates the zheng's evolving musical and

cultural identity, spanning from traditional practice to contemporary adaptation, revealing an underlying ancient Chinese aesthetic principle concerning the relationship between sheng (generated sound) and yin (cultivated sound) (2013), contributing significantly to fundamental zheng performance practices.

Building upon these scholarly foundations and recognizing the need for further exploration of microtonal zheng music, this research critically examines existing analyses of the specific pieces under consideration, including Shen (2011), Liu (2021), Bian (2022), and Liu (2023). These studies offer valuable insights such as the creative background, music analysis, application of special techniques, and performance experience into the technical and expressive aspects of microtonal zheng music, informing this paper's focus on the diverse microtonal approaches employed in five seminal works.

### Methodology

In this mixed-methods study, primary sources include the author's own experience as a zheng practitioner, providing an intimate understanding of the instrument's capabilities and performance nuances. Grounded in more than 20 years of training and performance in zheng playing, this firsthand knowledge will be applied to the interpretation of compositional choices within the specific context of zheng playing techniques.

To complement this experiential knowledge and provide a broader scholarly context, relevant scholarly articles, theses, books, and dictionaries pertaining to zheng music, microtonal theory, and Chinese musical traditions will serve as secondary sources. Music scores and recordings of the selected zheng pieces will also be analyzed as primary sources, offering direct access to the musical material under investigation.

As a core methodology in music research, compositional analysis will be applied to the five chosen pieces. Following established microanalysis analytical frameworks (White, 1994) this approach will examine few aspects such as musical form, harmony, melody, structure, and texture, however with a particular emphasis on the identification and interpretation of microtonal techniques. By considering both the structural and expressive dimensions of the music, this analysis aims to provide a comprehensive understanding of how microtones function within these specific compositions.

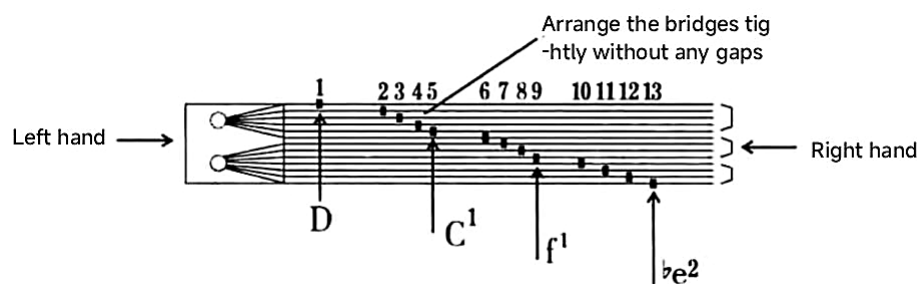
While acknowledging the potential for subjectivity inherent in experiential knowledge, this study aims to contribute to the ongoing discourse on the zheng's evolution and the role of microtones in shaping its contemporary musical expression. To mitigate potential bias, the findings will be triangulated with existing scholarly literature and supplemented by consultations with other zheng experts. Additionally, the study will adhere to established ethical guidelines for qualitative research, ensuring transparency and rigor in the data collection and analysis process.

### Non-scale Scordatura Tuning in 'Ziming Series II'

The Ziming Series II was written by Tang Jianping from the commission of the famous Japanese Koto player Erina Matsumura in 2000 (Li, 2012), whereas it can be applied on zheng according to Tang later (Liu, 2023). It is based on the Dunhuang mural 'Self Sound without Plucking (不鼓自鸣)' (In the Dunhuang mural caves, dating back to the early Tang Dynasty, colorful ribbons adorn each musical instrument, fluttering in the wind. Known as 'Self-Sound

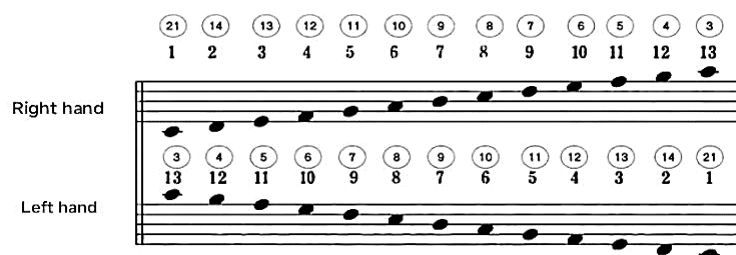
without Plucking,' every instrument can produce music autonomously). "Self-Sound without Plucking" symbolizes the world of Buddhist music rather than the mortal world (Shen, 2011). The theme of this is to express the spirit of unrestrained artistic creation. Stunningly, for the first time in the work, non-scale tuning method (非音阶定弦法) was used and a non-pitch notation method (非音高记谱方式) was adopted.

The tuning for the 13 strings Koto (figure 1) divides the strings into four non-scale group. The first string stands alone, starting from the bass, with a fixed D note. Strings 2-5, 6-9, and 10-13 are arranged in a free microtonal order, with the highest notes of each group designated as  $c^1$ ,  $f^1$ , and  $e^2_b$  respectively. This arrangement engenders a random microtonal situation, as each four-strings group is closely-packed without fixed intervals, except the highest note. The remaining three notes in each group are considered microtones with unfixed pitch spaces, determined by both the bridge's arrangement and wrench adjustment in the tuning box. The variable string tension, adjusted by the wrench influences the microtonal pitch, creating an open-ended microtonal range.



**Figure 1. The Tuning Of 'Ziming Series II' Divides The Tuning Method Into Four Groups In A Non-Scale Manner**

Given the nature of the Koto tuning, adapting 'Ziming Series II' for the zheng, a 21-stringed instrument, presents unique challenges. Liu Wenjia, a renowned avant-garde zheng player and the piece's premier performer, elucidates the adaptation process, which involves selecting 13 out of the zheng's 21 strings to replicate the Koto tuning (Liu, 2023). This process entails selecting four pitch groups to maintain the desired sound production effect, arranging string positions to optimize playability, and considering the timbre characteristics of both the Koto and zheng instruments. Based on these considerations, Liu established the zheng tuning and chose appropriate strings for playing (circled numbers in the figure 2).



**Figure 2. The Original Tuning On Koto And The Revised Tuning On Zheng In 'Ziming Series II'**



In a departure from past practices where zheng music was based on pitch relationship, this composition is tuned based on sound relationships. By abandoning conventional melodic pitch, the work combines sets of notes not belonging to a traditional scale, replacing them with the interaction of special sound combinations (e.g., harmonics, slides, glissandi). These novel sonic building blocks shape sound masses that evoke specific emotions (Gong, 2006). Also, observed by a zheng player Shen Yue (2011), the work boldly breaks through traditional pitch arrangement relationship, replacing the melodic flow and structure of the music with special sound flow (音流) and tone clusters (音块), shaping a musical vocabulary that is both emotional and free-spirited. This offers performers an unprecedented and ever-changing musical experience, distinct from the previously established scale-tuned music.

Due to the non-scale tuning, the work necessitates a unique non-pitch notation system, a further creative aspect of this composition. This system is specifically designed to accommodate the complexities of the non-scale tuning, eschewing traditional clef markings and instead utilizing the staff to represent the physical location of the strings on the zheng rather than their pitch. The upper staff designates playing on the right-hand strings, while the lower staff designates playing on the left-hand strings (see figure 2), with the resultant sound demonstrating microtonal pitch. Consequently, performers must memorize the string positions to accurately correspond to the notes on the score.

Simultaneously, the left-hand strings are utilized in a balanced manner with the right-hand strings, which is uncommon in earlier zheng compositions. This expanded use of the left-hand strings not only significantly increases the expressive means of performance but also greatly enriches the expressive power of the music (Shen, 2011).

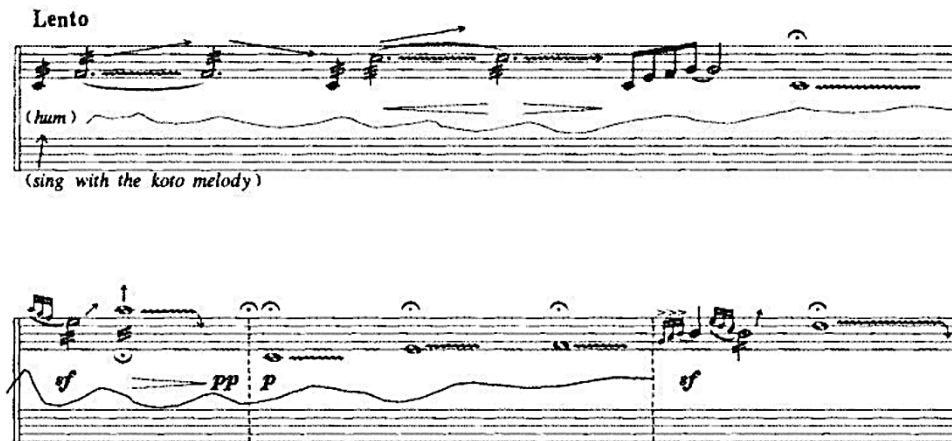
Analysis of the established tuning reveals that the right-hand strings 21st, 11th, 7th, and 3rd produce fixed pitches (D,  $c^1$ ,  $f^1$ , and  $e^2b$ ), while the remaining right-hand strings and all left-hand strings produce microtones. This wide range of microtonal pitches offers vast potential for pitch development and a sense of adventure in auditory perception. Firstly, a creative right-hand vibrato technique is employed. In Figure 3, the vibrato symbol on the lower staff indicates that the right hand vibrates the two right-hand strings after the left hand plucks them. Since the original pitch of these strings is microtonal, the vibrato pitch also retains a microtonal characteristic.



**Figure 3. An Excerpt From 'Ziming Series II'**

Secondly, this composition highlights the lasting appeal of 'Yun' - the musical flavor resulting from left-hand ornamentation techniques (Han, 2013), a hallmark of traditional zheng repertoire (Deng, 2006). This is particularly evident in the Lento part (see Figure 4), where

singing accompanies the instrument's pitch. This creates a range of 'Yinqiang,' a sound system where the core pitch ('qiang') is embellished with ornamental notes (Shen, 2019).



**Figure 4. An Excerpt Of The Lento Part From 'Ziming Series II'**

In this process, the core sound is transformed through sliding, vibrato, and other techniques, resulting in changes in pitch, strength, and timbre. This forms a smooth, flowing melodic contour without abrupt changes in pitch (Zhao, 2012), depicting the lasting appeal of a single pitch while also demonstrating a microtonal, unfixed pitch flow.

Therefore, 'Ziming Series II' serves as a prime example of a significant departure from the simple application of microtonal elements. The non-scale tuning method and non-standard notation enable this work to reflect numerous microtonal properties in an innovative and expressive manner.

### **Bb-Centered Microtone Tuning in 'Prayer Flags in the Wind' and 'Chorales in the Wind'**

Composed by Qin Wenchen for zheng solo in 2011 (Li, 2022), 'Prayer Flags in the Wind' and 'Chorales in the Wind' are sister works with innovative thinking and performance methods that hold pioneering significance for contemporary Chinese ethnic instrumental music. Due to their shared tuning and religious connotations, these two pieces are typically played and discussed together. These compositions utilize an identical tuning (see Figure 5).



$\flat$  = flat 1/2-1/8 (3/8)     $\flat$  = flat 1/2

$\flat$  = flat 1/2+1/8 (5/8)     $\flat$  = flat 3/4

**Figure 5. The Tuning Of 'Prayer Flags In The Wind' And 'Chorales In The Wind'**

According to Qin, after completing ‘Prayer Flags in the Wind,’ he serendipitously discovered that the left strings presented a complete and accurate Western church mode, thus prompting the immediate composition of the second piece, ‘Chorales in the Wind.’ Remarkably, the central note of the church mode (B $\flat$ ) on the left side of the bridge coincides with the central note on the right side. The tuning of these two pieces exhibits a collective characteristic, wherein the 21 strings of the zheng are divided into five groups based on the four octaves. The second to fourth groups consist of five notes each, while the first and last groups contain four and two notes respectively. All groups are tuned with B $\flat$  as the central pitch, primarily comprising microtones (B $\flat$ -3/8, B $\flat$ -5/8, B $\flat$ -3/4) with few instances of identical pitches.

This unique tuning design stems from Qin’s pursuit of subtle pitch deviations in individual notes and his emphasis on the essence of sound (Liu, 2020). Growing up in the Mongolian grasslands, Qin was familiar with Mongolian forms like ‘Chao Er’ (潮尔), a dual-tone resonance system, and ‘Ruo Gula Runqiang’ (若古拉润腔), a melodic ornamentation with small, wave-like fluctuations. This microtonal tuning approach creates a similar sound effect for each group, particularly suited for establishing a rough, expansive sound atmosphere (Lin, 2022). Drawing from both traditional Chinese music and Western microtonal systems, Qin constructed “dynamic lines formed by dynamic Runqiang” and microtonal decoration, which are neither Western microtones nor traditional folk tunes, highlighting his dynamic layout and development” (Xu, 2018). The tuning, with five sets of axial microtone series B $\flat$ , embodies the main characteristics of ‘microtonal deviation’ (微分偏移) and ‘phonemic microtone groups’ (声腔式微分音群), central to the composer’s creative style.

‘Prayer Flags in the Wind’ focuses on single notes on the right side in pitch, with the entire piece played using a cello bow on the zheng (Liu, 2021), resulting in a sound pattern with tension. The music presents a performance form of bowing, tapping, and bowing again. The bowing sections (see Figure 6) employ up-bow and down-bow with constant changes in strength and dynamics.

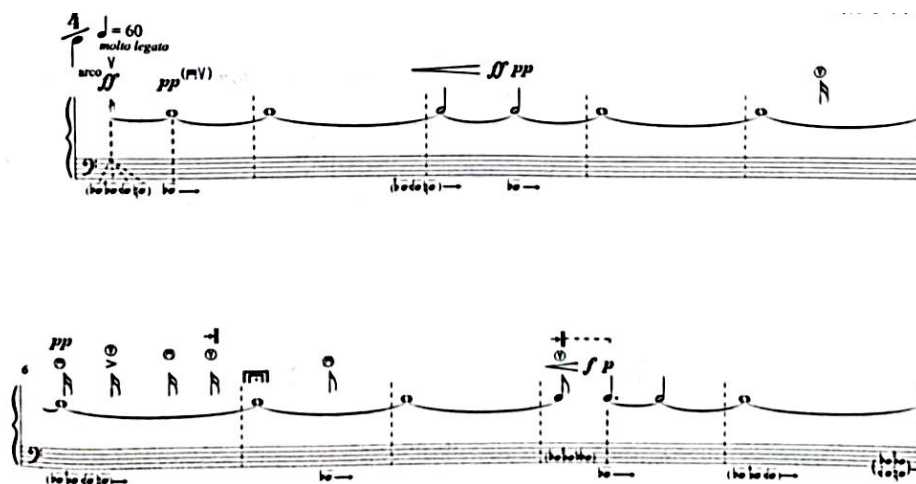
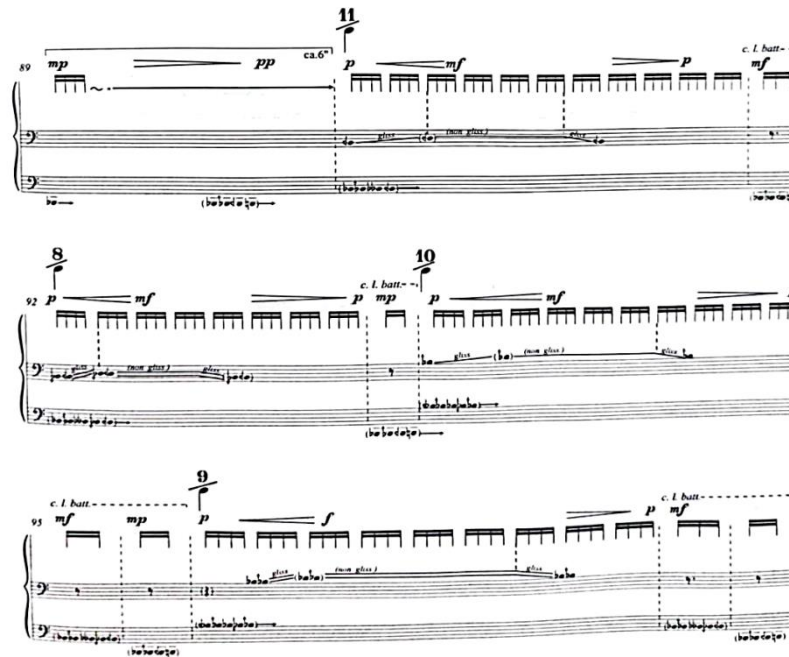


Figure 6. The Beginning Excerpt Of ‘Prayer Flags In The Wind’



Using a bow to vividly play microtones with multiple registers centered around B $\flat$  pitch creates a sense of sound expansion with bold lines in microtones. In contrast, due to the percussive nature of the tapping technique used in the tapping sections, the microtonal pitch variations cannot be clearly demonstrated. However, the left-hand glissando technique unfolds the microtonal pitch in an alternative manner (see Figure 7).



**Figure 7. An Excerpt Of 'The Prayer Flags In The Wind'**

In Figure 7, bars 90, 92, 94, and 97 all utilize the left-hand glissando technique while the right hand taps the strings with a bow. This involves playing single notes (e.g., bar 90 and 94, a minor third glide from B $\flat$  to d $\flat$ , or microtonal minor third gliding from B $\flat$ -3/8 to d1-3/8) or double-stop microtonal glides (e.g., bar 92 and 97, minor third gliding from B to D).

Unlike 'Prayer Flags in the Wind,' which emphasizes bowing techniques and microtonal application tuning with a few sets of microtones deviating from the center pitch of B $\flat$ , 'Chorales in the Wind' balances Eastern religious tones on the right side of the bridge with the Western church tone formed on the left side.

The accuracy of both sides of the tuning should adhere to the score. However, the composer permits prioritizing the accuracy of the left-side pitch if achieving simultaneous accuracy on both sides is difficult, limiting the accuracy to the ten notes in the high register. The left tuning corresponding to the right side of the bridge is shown in Figure 8, resulting in a note row that naturally forms the F Dorian mode (see Figure 9), rather than being neatly arranged by pitch.



**Figure 8. The Tuning Of The Left Strings In ‘Prayer Flags In The Wind’ And ‘Chorales In The Wind’**



**Figure 9. When Arrange The Note Row A F Dorian Mode Appeared On The Left-Strings Tuning**

‘Chorales in the Wind’ features extensive pianissimo playing and utilizes synchronized left and right-hand palm string wiping and plucking techniques (see Figure 10).



**Figure 10. An Excerpt Of The First And Second Passages Of ‘Chorales In The Wind’**

In the second period (see Figure 10, bar 11), the performance form is uniform, with left and right hands playing in the same direction on both sides of the bridge simultaneously. Most of these passages play melodic lines in the positive or negative directions of the scale formed by the strings (with some note changes), pausing or extending at the end of each motive. This creates similar melodic scales that are stable yet slightly fluctuating. The microtones, formed by the right tuning, are juxtaposed with the F Dorian mode concurrently. At times, the right-

hand playing incorporates a series of microtones centered around the B $\flat$  pitch, achieved through a glissando sweeping across six strings with microtones; at other times, it only traverses two strings with microtones.



**Figure 11. An Excerpt Of The Third Passages Of ‘Chorales In The Wind’**

The third period (see Figure 11, beginning with bar 12) introduces new materials and techniques. On the right-hand strings, the finger rotation technique is continuously employed to pluck four notes from the lowest microtonal B $\flat$  set while simultaneously generating the melodic part produced by the sliding technique, which includes the processing of sliding notes for microtones.



**Figure 12. An Excerpt Of The Ending Passage Of ‘Chorales In The Wind’**

The ending passage (see Figure 12) of ‘Chorales in the Wind’ is a recapitulation employing palm string wiping and plucking techniques. The microtonal melody is played synchronously with the F Dorian mode, particularly evident in bar 28 (see Figure 12).

In summary, the sister pieces ‘Prayer Flags in the Wind’ and ‘Chorales in the Wind’ represent unprecedented breakthroughs in zheng solo composition and performance practice. Notably, their microtonal tuning layout, emphasizing the axis tone row of microtones, demonstrates

microtones in a series of broad pitches, expanding the interpretive possibilities of microtonality on the zheng.

### Harmonic Series Scordatura in ‘Jiang Zhou Ode’

Composed by Zhu Lin in 2012 for zheng player Qiu Ji, ‘Jiang Zhou Ode’ is a work inspired by the Tang Dynasty poem “Mooring by Maple Bridge at Night” by Zhang Ji (Qiu, 2024). The composition utilizes microtones to transcend the 12-tone equal temperament and employs prepared timbres, designed to evoke the solemn sound of a bell, echoing the poetic phrase “Bells break the ship-borne roamer’s dream in midnight still” (夜半钟声到客船). This sonic evocation of a bell contributes to the overall atmosphere of the piece, enhancing the listener’s connection to the poem’s melancholic imagery.

The piece’s unique characteristics are showcased through its tuning, which incorporates both microtonality and the harmonic series. The 21 zheng strings are tuned into two sets of harmonic series, arranged in order on the odd and even strings. The odd harmonic series is based on D, while the even harmonic series is based on Eb lowered by a quarter tone (Bian, 2022), forming alternating harmonic series with a difference of 3/4 tones (150 cents). This results in ten out of 21 microtones appearing alternately with normal tones (see Figure 13).



**Figure 13. The Tuning Of ‘Jiang Zhou Ode’**

The juxtaposition of two harmonic series with a 3/4-tone difference creates a beating effect due to their close frequencies, adding tension to the music and interfering with the inherent harmony of each individual harmonic series. Combined with the composer’s creative use of techniques, this tuning evokes the sensation of pitch fluctuation and the gentle rocking of a small boat on the water. This innovative approach to tuning creates a sonic landscape that is both ethereal and unsettling, mirroring the emotional complexity of the poem.

The alternating arrangement of harmonics with a 3/4-tone pitch difference, while not unprecedented in Western music (composers like Per Nørgård and Sofia Gubaidulina have explored similar concepts in string ensemble works), is a novel application in zheng compositions (Tu, 2015). The 3/4-tone pitch difference between adjacent notes, particularly in ascending and descending melodies or glissandi, creates an effect of gradually shifting pitch, contributing to a broad, sweeping soundscape. Conjunct or winding conjunct motion melodies often feature in the piece, gradually pushing the melody at a slightly displaced pitch, creating a sense of anticipation for the unknown pitch within the melody (see Figure 14).

(1)

(2)

(3)

**Figure 14. Three Excerpts Of ‘Jiang Zhou Ode’ Which Show A Gradually Conjunct Motion**

This constant subtle shifting of pitch adds a layer of dynamism and unpredictability to the music, reflecting the emotional journey of the poem’s protagonist.

In sum, this composition breaks new ground in microtonal application by combining the harmonic series and prepared timbre, marking a significant milestone in the innovation of zheng performance practice. The unique tuning system and evocative use of microtones contribute to a distinctive and captivating musical experience that complements and enhances the poetic imagery of “Mooring by Maple Bridge at Night.”

#### **Left Palm Pressing for Creating Microtones in ‘Lotusduft’ (荷香)**

‘Lotusduft’ is a zheng solo composed by Taiwanese composer and zheng player Chaoming Tung. Inspired by a dialogue with the guqin piece ‘Youlan’(幽兰), Tung experiment with diverse plucking methods and performance techniques to create a wide array of sounds, integrating the use of multiple parts of the instrument to expand the expressive potential of the zheng. The residual sound produced by plucking the strings from zheng is intended to evoke the fragrance emitted by a lotus flowers, capturing its noble character (Tung, 2018).

A defining characteristic is the precise use of microtones in various lingering sounds. The composition utilizes a range of microtonal applications, all demonstrated through left-hand techniques on the left side of the strings, yet each with distinct approaches. Bar 17 in Figure 15 is a prominent example of microtones employed in an ambiguous, range-based manner.





**Figure 15. An Excerpt Of 'Lotusduft' (Bar 15-18), The Score Supplied By Composer Tung**

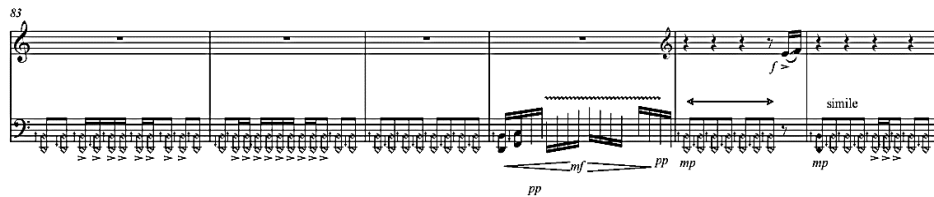
The constant vibrato symbol (~~~~~) above the entire bar indicated that the tones in this section should be played with vibrato using the left hand. Since the melody consist of ascending or descending arpeggios rather than single notes, an effective approach is to use the left palm to fluctuate across the range of corresponding strings, following the changing range of the tones.

Compared to finger pressing, palm pressing offers wider string control and smoother pitch transition, resulting in a richer and more resonant tone. The section of the palm near the fingers allows for greater flexibility than the part closer to the arm. When executing large-scale sliding and pressing, the palm's center of gravity can roll on the strings while the finger-adjacent area controls the strength and speed of the performance. Remarkably, this series of actions creates an unexpected, ethereal atmosphere, allowing the microtones surrounding the notated pitch to emerge organically, aptly capturing the essence of the lotus fragrance through the residual sound of plucking and conveying a sense of transcendence. In bars 45-46 (see Figure 16), a similar approach is employed where the left palm acts upon a range of strings, producing a series of microtones that hover around the actual pitch, as vibrato cannot be achieved with individual fingers during a fast and dense right-hand plucking pattern.



**Figure 16. An Excerpt Of 'Lotusduft' (Bar 45-46)**

Similar applications occur in bar 83 (see Figure 17), bars 95-96, and bars 99-100 (see Figure 18).



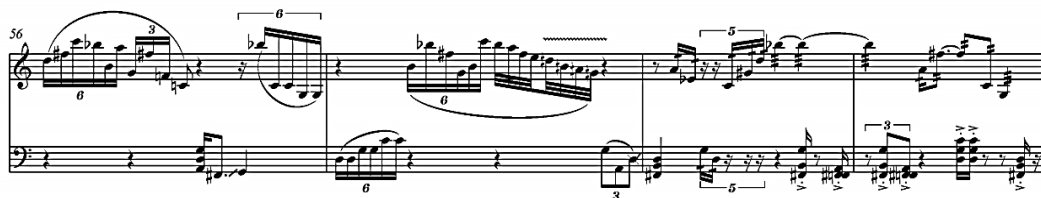
**Figure 17. An Excerpt Of 'Lotusduft' (Bar 83-88)**



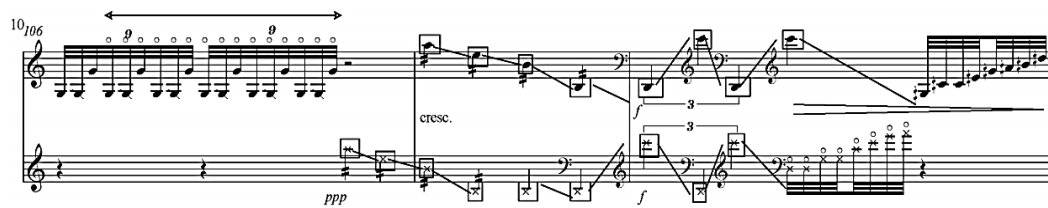
**Figure 18. An Excerpt Of 'Lotusduft' (Bar 94-100)**

The vibrato symbol signifies more than a simple vibrato on a single or several notes; it represents an extended and expansive vibrato effect throughout the composition. This technique adds a subtle yet expressive layer to the music, enhancing the evocative nature of the lotus fragrance.

In addition to vibrato symbols, explicit microtonal symbols, such as sharp quarter-tone notes, are also incorporated into the score. For example, in bar 57 (see Figure 19) and bar 108 (see Figure 20), four and eight microtones with sharp quarter-tone symbols respectively, are clearly indicated as ascending or descending leaps.



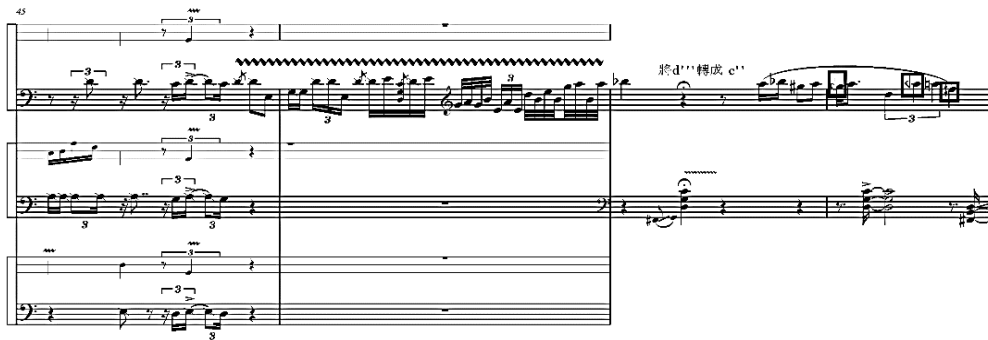
**Figure 19. An Excerpt Of 'Lotusduft' (Bar 56-59)**



**Figure 20. An Excerpt Of 'Lotusduft' (Bar 106-108)**

These microtones are produced by left-hand finger pressure on the left strings, similar to the previously mentioned techniques, but with more precise notation. The use of explicit microtonal symbols allows for a more controlled and intentional exploration of microtonality within the composition.

Another distinct microtonal approach in this piece involves left-hand finger pressure to achieve specific microtonal pitches. In bar 47 (see Figure 21), microtones include a G lowered by a quarter tone, A, and an F raised by a quarter tone, all requiring precise left-hand finger placement.



**Figure 21. An Excerpt Of 'Lotusduft' (Bar 45-47)**

Similarly, in bar 53, a chord containing three quarter-tone sharps necessitates multiple left-hand fingers acting on different strings to achieve the desired microtonal pitches (see Figure 22). This technique highlights the performer's technical skill and ability to manipulate microtonal intervals with precision and accuracy.



**Figure 22. An Excerpt Of 'Lotusduft' (Bar 53-55)**

Therefore, 'Lotusduft' utilizes two distinct approaches to microtonality, both employing left-hand techniques but showcasing different aesthetic effects. One approach creates an extended

phrase of microtonal pitches in a vague, atmospheric manner, while the other emphasizes precise, notated microtonal intervals. This dual approach demonstrates the versatility of the zheng in exploring microtonality and expands the expressive possibilities of the instrument.

## Conclusion

In summation, this paper examined five contemporary zheng compositions, each demonstrating distinct approaches to microtonal application. Certain compositions like Tang Jianping, Qin Wenchen, and Zhu Lin's, creatively integrate microtonality into their tuning systems, while Chaoming Tung employ it through diverse left-hand techniques such as gliding and pressing. The discourse herein showcases the most inventive contemporary applications of microtonal approaches on the zheng, encompassing non-scale scordatura tuning, note-centered microtone tuning, harmonic series scordatura, and left-palm pressing for microtonal creation.

It is noteworthy that microtonality transcends the traditional notion of pitch deviation within a single note. At times, while a microtonal approach is utilized, the emphasis lies on incorporating Yinqiang or Yun, which are integral elements of traditional Chinese music. Liu Wenjia (2023), in "Exploring the Creative Space of Modern Zheng Music Performance: Taking the Performance of 'Ziming Series II' as an Example," elucidates her deliberate incorporation of vibratos, gliding, and other left-hand techniques to imbue Yinqiang with a more Sinicized and zheng-specific character, thereby enhancing the individuality of Yun in 'Ziming Series II.'

After examining these five contemporary zheng compositions, the responses to the three questions posed in this paper are as follows:

1. Contemporary zheng composers leverage microtonal techniques to expand the instrument's sonic palette and deepen emotional expressiveness. The approaches such as non-scale scordatura tuning, note-centered microtone tuning, and harmonic series scordatura allow composers to move beyond conventional pitch structures, exploring nuanced gradations of pitch that evoke subtle emotional nuances.
2. In seminal zheng compositions examined, microtonal techniques play a pivotal role in shaping the musical atmosphere. Techniques such as non-scale scordatura tuning, note-centered microtone tuning, harmonic series scordatura, and left-palm pressing are creatively integrated into compositions. These techniques contribute by introducing subtle variations in pitch that go beyond the confines of traditional scales. This meticulous attention to microtonal detail enriches the experience of both composers and performers, providing a deeper emotional connection and a heightened sense of musical texture and complexity.
3. The incorporation of microtones in modern zheng compositions reflects a broader trend of experimentation in Chinese music. By embracing microtones, composers challenge traditional notions of pitch and explore new sonic territories. This trend underscores a shift towards innovation and artistic exploration within Chinese music, where composers seek to redefine the expressive capabilities of traditional instruments like zheng.

While, existing microtonal applications have undergone unexpected and remarkable development, further exploration is warranted. Microtonality holds vast potential for research and application. Building upon this investigation, it is the author's aspiration to ignite the curiosity of academicians, performers, and composers, and to foster the creation of more

refined and innovative techniques and compositions within this domain, thereby realizing the value of this research.

### Acknowledgment

The authors acknowledge Dr. Lee Chie Tsang Isaiah for his valuable assistance and insightful comments during the review of this paper. Financial support is provided by the Shaanxi Provincial Department of Education's special research project titled "The Late Influence of Western Modernist Music Schools on Chinese Ethnic Music Creation in the 20th Century" (Project Number: 20JK0010).

### References

- Bian, J. J. (2022). Sound, Time, and scene - The relationship between music creation and performance from the composing technique and performance treatment of Qiu Ji's performance version of "Jiang Zhou Fu", *Journal of Chines Music*.
- Deng, H. Q. (2006). Musical Change and Continuity of Huayin: The Essence of Chinese Zheng Music. Master thesis of Florida State University.
- Geer, G. (2014). Microtonal Music and its Relationship to Historical Practice. Anglia Ruskin University. [https://www.academia.edu/6811911/Microtonal\\_Music\\_and\\_its\\_Relationship\\_to\\_Historical\\_Practice](https://www.academia.edu/6811911/Microtonal_Music_and_its_Relationship_to_Historical_Practice)
- Gong, X. T. (2006). Bosom friends share the same words - "Ziming Series II" and "Spring in the Forest", *People's Music Journal*.
- Han, M. (2013). The Emergence of the Chinese Zheng: Traditional Context, Contemporary Evolution, and Cultural Identity. The University of British Columbia. Doctor of Philosophy thesis.
- Kirnbauer, M. (2015). "Vieltönigkeit" instead of Microtonality: The Theory and Practice of Sixteenth- and Seventeenth-Century "Microtonal" Music. Chapter 3 of 'Experimental Affinities in Music Edited' by Paulo de Assis. Leuven University Press.
- Li, M. (2012). A Collection of Modern Chinese Zheng Compositions (2). People's Music Publishing House.
- Li, M. (2022). A Collection of Modern Chinese Zheng Compositions (3). People's Music Publishing House.
- Lin, X. (2022). An Analysis on The Composition Techniques of Qin Wenchen's Guzheng Music Creation, Master thesis of Chinese Conservatory of Music.
- Liu, P. (2020). Personal Thinking on the Creative Directions of Chinese Contemporary Zheng Music. *Revista Vórtex | Vortex Music Journal*. <http://vortex.unespar.edu.br/>, D.O.I.: <https://doi.org/10.33871/23179937.2020.8.1.1-9>
- Liu, W. J. (2021). Vast poetry in the solemn -- an analysis of Qin Wenchen's two Zheng music works, *Journal of the Central Conservatory of Music*.
- Liu, W. J. (2023). Exploring the Creative Space of Modern zheng Music Performance: Taking the Performance of 'Ziming Series II' as an Example, *Journal of musicological research*
- Morgan, R. P. (1991). *Twentieth Century Music: A History of Musical Style in Modern Europe and America*. W.W.Norton & Company.
- Narushima, T. (2018). *Microtonality and the Tuning Systems of Erv Wilson*. Routledge Publisher.
- Qian, R. P. (2010). A study of the composition techniques of quarter-tone illustrated by five representative pieces, Ph.D. Thesis of Shanghai Conservatory of Music.
- Qin, W. C. Online report: Interview with Qin Wenchen, [https://www.sohu.com/a/274506877\\_304932](https://www.sohu.com/a/274506877_304932)



- Qiu, J. (2024). Contemporary Works Collection of Chinese Zheng. People's Music Publishing House.
- Shen, Q. (2019). A phonemic theory on traditional Chinese music. Shanghai Music Publishing House.
- Shen, Y. (2011). Performance Analysis of the "Ziming Series II", Master thesis of Central Conservatory of Music.
- Sadie, S., & Tyrrell, J. (Eds.). (2001). The New Grove Dictionary of Music and Musicians (2<sup>nd</sup> ed.). ISBN 978-7-5404-5623-8
- Tu, H. W. (2015). The Analysis and Research of Guzheng Solo Piece "Jiang Zhou Fu", Master thesis of China Conservatory of Music.
- Tung, C. M. (2018). On-line resource: <https://www.youtube.com/watch?v=v9sCcjpxE38>
- White, J. D. (1994). Comprehensive Musical Analysis. The Scarecrow Press, Inc. ISBN:978-0-8108-4560-2
- Xu, Y. T. (2018). Returning to the Origin and Opening Up a New Era - The Sound Organization and Cultural Representation in Qin Wenchen's Music, Nanjing arts institute PhD thesis.
- Yu, R. Y. (2004). General History of Western Music. Shanghai Music Publishing House. (3<sup>rd</sup> ed.).
- Zhao, D. M. (2012). Inheritance and Innovation of Chinese Traditional Music Pitch Elements in Contemporary Music, Doctor thesis of Chinese Conservatory of Music.