

Universal Multiple-Octet Coded Character Set
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Appendix: 1

1. Problems of Guqin Jianzi encoding in WG2-N5041^[1]

In WG2-N5041, a method of encoding for characters of Guqin scores (be called Jianzi in WG2-N5041) was introduced. Guqin Jianzi originated in the Tang Dynasty and has been used up to now. However, the formation of glyph is so complicated. Characters of Jianzi have not be encoded.

We have read and analyzed the method in WG2-N5041 carefully. Encoding basic characters and format controls, then combine into clusters for the complex characters. We think this method accord with the characteristics of Jianzi. But we also think there are some problems in this method.

1.1 It is too complex to describe Jianzi by fixed structure

In WG2-N5041, Jianzi clusters (big-size) is described by 3 formats with specific structure. Any Jianzi cluster will be described by 1 of 3 formats. This method can describe most characters of Jianzi but too complex. It will introduce many problems.

1.1.1 There must be a layout table.

Because Guqin Jianzi have not be normalized, there are some different glyphs for same character in different books. In order to show these differences, there are 4 selectors (JIANZI LAYOUT SELECTOR) designed in WG2N5041. However, to describe different layouts by encoding, a layout selectors table outside of the encoding table must be used for mapping layouts and selectors. It will increase complexity of encoding system. For example:



(Q-419726, *Yangchuntang GuQin Score*, 阳春堂琴谱)^[2]



(Q-321675, *Wuyin GuQin Score*, 五音琴谱)^[2]



(Q-465589, *Xinchuan Lixingyuanya*, 新传理性元雅)^[2]

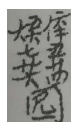
The above three characters have the same meaning. They are read as “Da Qi Ban Tiao Wu” (大七半挑五). It means “thumb of left hand presses marker seven and half, index finger of right hand plucks fifth string.” The layouts of the “Da Qi Ban” section are different. So selector-layout mapping must be specified.

1.1.2 *There may be some characters that cannot be described.*

Because the Guqin Jianzi has not been normalized so far, there may be some characters for particular playing methods cannot be described by scheme in WG2N5041. In addition, as a widely used musical instrument nowadays, some new characters are created with new playing methods and skills. For example, the following two characters are not found in Appendix 3 of WG2-N5041. We don't know how to describe them.



(Q-515316, *Tao's GuQin Score*, 陶氏琴谱)^[2]



(Z-1528, *New Sound of Guqin*, 古琴新声)^[3]

1.1.3 *Characters of the same type are described by different structures.*

There are two examples given by Appendix 3 of WG2-N5041. The two characters are same type. But they are be described by different structures, due to the different number of components reduced. Some “ditto” messages in first

character  were lost because a simple structure be used.



JZCC01 structure is used in Appendix 3 (P18, L4) of WG2-N5041. It means that there are only 5 components (include “ditto”) in this character. The coding sequence is:

<U+1DAE4,U+1DAE2,U+1DAE2,U+1DAE2,U+1DB52,U+1DAF0,U+1DB29,U+1DAE1,U+1DB0E>



JZCC02 structure is used in Appendix 3 (P81, L4) of WG2-N5041. It means that there are 11 components (include “ditto”) in this character. The coding sequence is:

<U+1DAE5,U+1DAE2,U+1DAE2,U+1DAE2,U+1DAE2,U+1DB29,U+1DAE2,U+1DAE2,U+1DAE2,U+1DB23,U+1DB0E,U+1DB52,U+1DAF0>

1.1.4 For common Jianzi, a lot of redundant characters will be filled in.

The characters of Guqin Jianzi contain different parts. In Guqin Jianzi, when a component is same with previous characters, this component can be omitted. So the same finger method will be shown by different characters.

For fixed structure, fillers must be used to fill the structure. In WG2-N5041, there is a control character JIANZI DITTO FILLER be designed for the omitted component. In real Guqin score, most Jianzi needn't whole components of the fixed structure. Thus, there will be a lot of fillers be used in Guqin scores.

For example:

- 1) Having analyzed the Guqin music materials we collected, it is estimated that around 80% characters need fillers by scheme of WG2N5041. All top 20 highest frequently used characters of the 190,000 characters need fillers: 1 character needs 1 filler; 1 character needs 2 fillers; 14 characters need 3 fillers respectively; 4 characters need 4 fillers respectively. Totally more than 580,000 fillers are needed for the total 190,000 characters.
- 2) There are 1905 fillers in the Jianzi Sequences of the 1091 samples shown in Appendix 3 of WG2-N5041. Only 220 samples in the 1901 needn't filler.
- 3) The sample is Fig. 1.2.1 of WG2-N5041. All characters in the sample need more than 3 fillers.

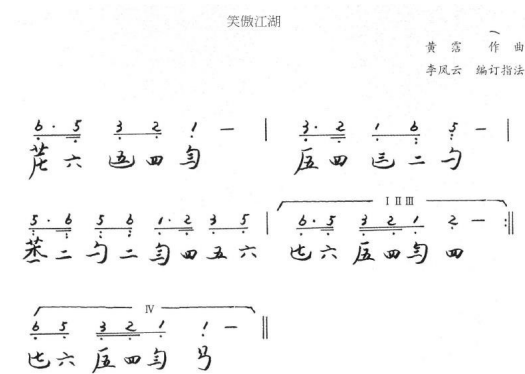


Fig. 1.1.4.1 Sample of Guqin score in WG2-N5041

1.2 It's hard to cover all Ideograph-like characters by encoding everyone.

There are some characters of Jianzi written like ideographs. But most of them are combinations of basic units. Such as 退 (QZ-590, TuiYin, 退吟) is combined by 退 (Z-407, Tui, 退) and 吟 (QZ-519, Yin, 吟). In WG2-N5041, each character of this type was given a code. This will cause some problems.

1.2.1 It will be difficult to cover all characters

In WG2-N5041, some common characters were encoded. But there are many common characters appearing in Guqin score books were not included. Such as 慢 (Z-483, ManTan, 慢弹), 连 (Z-488, LianTan, 连弹), 圆 (Z-588, yuanSuo, 圆锁) etc. There are a lot of these combinations. According to the development of Guqin playing techniques, new characters will appear. Such as 连 (Z-829, LianSuo, 连锁) appeared in *New Sound of Guqin* (古琴新声). It will be difficult to cover all these combinations with this encoding method. Encoding system will be constantly updated.

1.2.2 The number of variants will be too large.

Because Guqin Jianzi haven't be normalized. Many characters have variant glyphs. There may be different glyphs for all basic units. The combination may be in different layout format. These different units can combine a lot of variants. In *Integration of Guqin fingering notation* (古琴指法谱字集成), character YuanLou (圆搂) include 11 variants.^[3] There are only 7 variation selectors were

designed in WG2-5041, it is not enough.



Fig 1.2.2.1 Variants of YuanLou in Integration of Gugin fingering notation

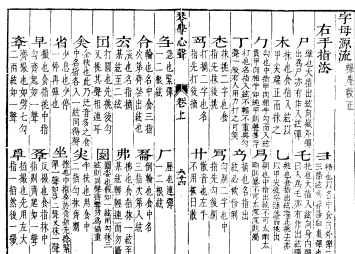
(Z-686 to Z-696, Integration of Guqin fingering notation, 古琴指法谱字集成)

1.3 Ordering by number of strokes is not in conformity with practices

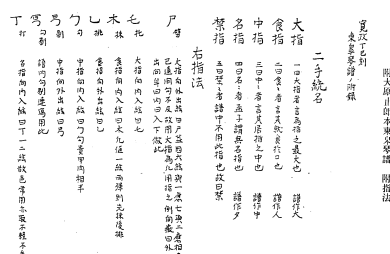
1.3.1 Ordering should be based on traditional habits.

There is a widely used practice for classification and ordering of Guqin Jianzi. Similar classification and ordering methods have been used in all materials (score, textbook and other about Guqin) we have found. The common classification methods have right hand fingering, left hand fingering, both left and right hands fingering, normal fingering, and so on.^{[2][4][5][6]} Ordering should be based on traditional habits, or will cause more problems for users.

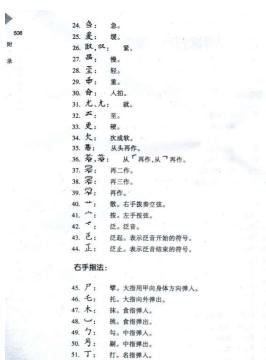
In WG2-N5041, Guqin Jianzi characters are sorted in number of strokes. In fact, most characters of Guqin Jianzi have many variants. It will be difficult to get the correct number of strokes without knowing the used glyph when characters are ordered in number of strokes.



琴学心声谐谱[2]



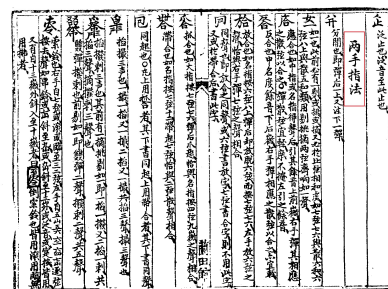
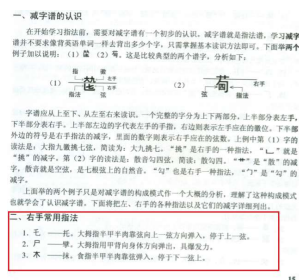
东皋琴谱[2]



虞山吴氏琴谱^[4]



古琴艺术的机器演绎[5]



古琴初级教程^[6]

兰田馆琴谱^[2]

Fig 1.3.1.1 Samples of Fingering Table

1.3.2 The problems proposed in WG2-N5041 can be solved.

There are 4 examples in WG2N5041 explaining why the traditional ordering method is not applied, but we think all problems in the samples are not insoluble.

1) Meanings of 尸(擘) and 乇(托) are interchanged in different books

Meanings of 尸(擘) and 乇(托) were interchanged in Qing Dynasty. But now, people in Guqin circles have same understand.

2) Different fingerings use same glyph

It is hard to recognize character 𠂇 to fingering class left or right hand. Because it represents two different fingerings, a right hand fingering (换) and a left hand fingering (唤). This question can be solved by Guqin circles.

There were solutions in some Guqin scores. For example: use different glyphs

to represent, such as 𠂇 and 𠂈 (Qinxiangtang Guqin Scores, 琴香堂琴谱)^[2].

3) Numerals are not listed in almost all the books

The numerals used for strings and markers are not listed in almost all the books, because all of them are used as glyph same to ideographs. Their meanings are very clear. They need not be described in fingerings table. Numerals are often included in modern books, and are classified in normal characters.

small-sized cluster. It can be implemented by application and need not be encoded as characters. Such as to process PinYin (Chinese spelling) on ideographs, or upper and lower subscript.

A^2 (upper subscript), A_2 (lower subscript),

zǐ	xì
仔	细

 (PinYin)

Fig 1.5.2 Sample of PinYin and Subscript

1.6 Other questions.

1.6.1 卅 (san, 散) should be considered left hand fingering

In many ancient Guqin scores, 卅 (san, 散) is classified as right hand fingering. It means playing string(s) with right hand and not pressing any string with left hand. In fact, it is a rule for left hand that means “the left hand does not press any string”. 卅 can be combined with all right hand fingerings, but cannot be combined with any left hand fingering. If 卅 is classified as right hand fingering, there will be a lot of combination of right hand fingering. Such as:^{[2][3]}

卅 (Z-205, SanDa, 散打), 卅 (QZ-1132, SanYi, 散抑),
 卅 (QZ-1212, SanRu, 散如), 卅 (QZ-5035, SanZhai, 散摘),
 卅 (QZ-132, SanJuan, 散蠲), 卅 (QZ-429, SanJianGou, 散间勾).

If 卅 is classified as left hand fingering, these fingerings will become normal, means right hand playing and left hand free. In many new materials, 卅 is classified as normal character without left or right hand.^{[3][4][6]} We think 卅 should be classified as left hand fingering. Because 卅 is a rule of left hand, and mutual exclusion with all left hand fingerings. If 卅 is classified as left hand fingering, it will become easy to process about 卅. There is a sample in ancient Guqin scores that 卅 is classified as left fingering - *Siqitang Guqin Scores* (思齐堂琴谱). So we suggest to classify 卅 as left hand fingering.

In WG2-N5041, 卅 is classified as right hand fingering. The sample in Appendix 3, 卅 and other right hand fingering to be combined by JOINER. For example:

卅 (San Tiao Liu Xian, 散挑六弦, WG2-N5041, Appendix 3, P10, L12)

The Jianzi sequence given in Appendix 3 of WG2-N5041 is:

<U+1DAE4,U+1DAE2,U+1DAE2,U+1DAE2,U+1DB23,U+1DAE0,U+1DB01,
U+1DB29>

If 卅 is classified as left hand fingering, the Jianzi sequence will be easy:

<U+1DAE4, U+1DB23,U+1DAE2,U+1DAE2, U+1DB01,U+1DB29>

1.6.2 Name of filler (DITTO) is inaccurate

There is a filler control symbol in WG2-N5041, be used to fill the Jianzi structure, when the components is less than the asked number of structure. The symbol is named JIANZI DITTO FILLER. But not all environments used for this character are DITTO. For example:

鸞
鸞

(Shenqi Secret Score, 神奇秘谱, ZHXHP000001-000162-1)

The two characters is “Zhong Ba Qi Gou Er” (中八七勾二) “and Ming Qi Gou San” (名七勾三). According to the definition of structure in WG2-N5041, both of them are structure JZCC01. There will be 5 components following JZCC01. But the second character has only 4 components, so a FILLER is needed after Ming qi (名七) to fill sub-marker. Fig. 1.6.1 show the sequences of the two characters.

鸞 = 中 八 七 勾 二
鸞 = 名 七 勾 三

Fig1.6.1 Sample for Sequences about DITTO

The second character is left hand press marker 7, no sub-marker. If JDFZ means ditto, it means that the same sub-marker 7 as the previous character has been omitted. The result of second character will become to “Ming Qi Qi Gou San” (名七七勾三). This by-default interpretation is obviously wrong.

1.6.3 Picture error

Figure 1.1.2 in WG2-N5041, the title is "Guqin", the music instrument in the picture is not Guqin, it is Zheng (箏).



Gu-Qin: 7 Strings, No Pillar.



Gu-Zheng: More strings, Goose Pillars(雁柱)

Fig1.6.3.1 Pictures of Guqin and GuZheng

2. Suggested Solutions

2.1 A Method for Jianzi Encoding with Unfixed Structure.

2.1.1 Introduction of the Method for Jianzi Encoding with Unfixed Structure

A method to describe structure of characters of Guqin Jianzi by XML was proposed in reference [7]. Based on this method, characters of Guqin Jianzi are combined as structures same to ideographs, characters of Guqin Jianzi can be described as Ideographic Description Sequence (IDS). For example:

𪛗 (Da Qi Tiao Qi, 大七挑七),

will be described as: 𪛗大七𪛗七

The advantage of this method is that it can describe all characters of Guqin Jianzi in a simple and clear format. All we need to do is to define the basic components and rules of combination. There is no need to specify anything else. For example, JIANZI LAYOUT SELECTOR will be not need. For innovation of fingerings, this method can describe without adding new control symbols. In addition, sequence of components in this method is same to reading and meaning sequence of Guqin Jianzi characters. It is easy to understand, retrieve and input. We suggest to encoding Guqin Jianzi with this method.

2.1.2 Control Symbols of Unfixed Structure

- 1) Control symbols of unfixed structure include most of Ideographic Description Characters

Control symbols of unfixed structure include 11 of the existing 12 IDCs.



The overlapping-structure symbol is not selected for avoiding ambiguous structural meanings.





2) New symbols for common structure.



 - a common structure of left hand fingering:




For example: 獨 will be describe as 大五半勺五

 - a class of structures, such as 早 (Cuo, 撮):

For example: 早 will be describe as 早一六

2.1.3 The problems of fixed structure can be solved by this method





1) JIANZI LAYOUT SELECTOR will be need not.

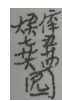
𪛗 (Q-419726): 大七半乚五

𪛘 (Q-321675): 大七半乚五

𪛙 (Q-465589): 大七半乚五

2) Ability to describe complex characters.


𪛚 (Q-515316): 𠂇五𠂇女五𠂇六





(Z-1528): 大五六七𠂇六𠂇𠂇𠂇𠂇𠂇 六半


五𠂇四𠂇𠂇尸乚

3) Characters of same type are described by same structural symbol.

𪛜 (WG2-N5041-P18, L4): 早六三

𪛝 (WG2-N5041-P81, L4): 早六𠂇三

4) Common characters is simple, need not fillers.

𪛞 (Q-15871, 西麓堂琴统): 勺四

𪛗 (Q-216268, 古音正宗): 𪛗 𪛗 𪛗 𪛗 𪛗

In our characters database (collected from *Integration of Guqin scores*, 琴曲集成), 𪛗 has 13133 samples, is the most. 𪛗 has 9752 samples, is no. 9.

2.1.4 Comparison between fixed and unfixed structure methods.

Unfixed structure encoding methods describe characters simpler and clearer. It need not tables about control and layout selector. For code sequence size, in unfixed structure method, there are more codes are required for complex characters, and there are less codes for simple characters. In fixed structure method (WG2-N5041), for complex characters, it maybe use codes less than unfixed structure method. But for simple characters, it must use more codes to fill the fixed structure. In practical Guqin scores, the most characters are simple. If simple characters being described with few codes, total size of Guqin scores will be small, and the score will be easy to understand. For complex characters, frequency of use is very low, it doesn't matter much even a character need more codes.

2.2 Use combination to describe ideograph-like cluster.

There is a method of encoding to Guqin ideograph-like characters was introduced in reference [5]. In this method, only basic components will be encoded, other characters will be combined by basic components, even ideograph-like characters.

This method not only can reduce number of encoding characters, but also can cover almost all characters of Guqin Jianzi. It will improve the stability of encoding system. We suggest use this method.

In fact, components of Guqin Jianzi are different to components of ideographs. If some components combine to an ideograph character, the new character will have new pronunciation and meaning. If some components combine to a character of Guqin Jianzi, the new character will be read as the sequence of components, and its meaning is combination of all components. Characters of Guqin Jianzi should be described by basic components. For example:

𪛗 Describe as 𪛗 𪛗 𪛗,

It is combined by 𪛗(Tui, 退) and 𪛘(Yin, 吟). It is read Tui Yin (退吟), and it's meaning is to play as combination of 𪛗(Tui, 退) and 𪛘(Yin, 吟).

In the 336 characters in WG2-5041, 𪛗 was not encoded, but was used 15 times in other combinations. 𪛘 was encoded as U+1DBF0, and was used 39 times in other combinations. Consider encoding all basic components: all 336 characters in WG2-5041 could be covered by 185 basic components; or 254 basic components to cover all 717 characters (336 in WG2N5041, 381 in WG2N5041Appendix 1).

2.3 Unfixed Structure Method is an available solution.

With this method, both cluster characters and ideograph-like characters can be processed with unified rules.

The rules are simple and easy to understand. It is an available solution for Guqin Jianzi encoding.

3. Some Issues

3.1 Characters of Guqin Jianzi Should be Normalized.

Many Guqin score books provide one fingering letter tables. But Guqin Jianzi has not been standardized. There are many remaining problems because non-standard and non-uniform. Such as one character is described by more different glyphs and one glyph is used to represent several different characters.

Before encoding, existing characters of Guqin Jianzi should be standardized by most experts in Guqin circles. We should have an accurate and clear characters set as the foundation of encoding. In addition, variants can be used to describe the different glyphs.

3.2 The rules of new fingering characters should be formulated

Guqin is a widely used music instrument. With the development of playing skills, there will be some new playing method to be innovated. For example, some innovative characters was include in *Integration of Guqin fingering notation* (古琴指法谱字集成). If there is no standard for new fingering characters, these innovative characters will be arbitrary written. Encoding to these characters will

become difficult. We need rules for innovative fingering characters. The new fingering should be described by encoded components and control symbols as far as possible, avoid code set will be updated frequent.

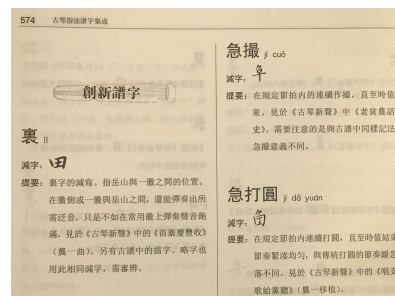


Fig. 3.2.1 Innovative Characters^[3]

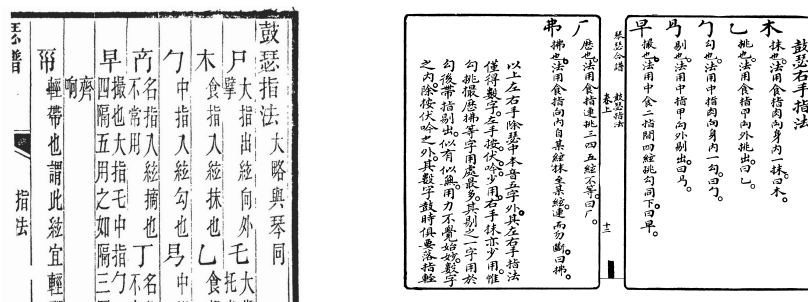
3.3 Research characters of similar music instrument scores

Se (瑟) is a kind of ancient music instrument too. Playing method of Se is similar to Guqin. There are some other music instruments use similar playing method. Most characters of scores for these music instruments are same to Guqin Jianzi. But it also has its own characteristics. For example:



Fig. 3.3.1 Characters of Se^[2]

Encoding for these characters should be considered in a unified way.



Scores of Se, 拟瑟谱 Combining Scores of Guqin and Se, 琴瑟合谱^[2]

Fig. 3.3.2 Samples of Se Scores

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Description for the Source of Samples

Q —— Database of Integration Guqin scores (琴曲集成-资料库)

QZ —— Fingering tables in Integration Guqin scores (琴曲集成-指法表)

Z —— Integration of Guqin fingering notation (古琴指法谱字集成)

Appendix 1. Characters Un-included in WG2-N5041

ID	Glyph	Name	ID	Glyph	Name
QZ-1358	久	各 ge	QZ-404	無	无 wu
QZ-1417	𡵓	定 ding	QZ-273	𠂇	无声 wu sheng
QZ-1376	𠂇	指 zhi	QZ-1205	𠂇	随声 sui sheng
QZ-5030	𠂇	中按 zhong an	QZ-1201	𠂇	合声 he sheng
QZ-1074	𠂇	跪按 gui an	QZ-1212	𠂇	散如 san ru
QZ-1073	𠂇	并按 bing an	QZ-5031	从	从 cong
QZ-1077	𠂇	双按 shuang an	QZ-1322	𠂇	作 xuo
QZ-1147	𠂇	撇（撇） e	QZ-1525	𠂇	加 jia
QZ-1072	𠂇	屈按 qu an	QZ-1422	𠂇	次 ci
QZ-1396	𠂇	落 luo	QZ-1293	𠂇	应息 ying xi
QZ-1430	𠂇	落指 luo zhi	QZ-1294	𠂇	忍 ren
QZ-472	𠂇	并 bing	QZ-1418	𠂇	微 wei
QZ-1255	𠂇	慢 man	QZ-1156	𠂇	近 jin
QZ-1271	𠂇	又慢 you man	QZ-1160	𠂇	远 yuan
QZ-1317	𠂇	徐 xu	QZ-1427	𠂇	略 lve
QZ-1318	𠂇	徐作 xu zuo	QZ-1425	𠂇	斜 xie
QZ-362	𠂇	急连 ji lian	QZ-1227	𠂇	得 de
QZ-1306	𠂇	复急 fu ji	QZ-5033	𠂇	句 jv
QZ-1360	𠂇	另 ling	QZ-918	𠂇	起 qi

ID	Glyph	Name
QZ-1416	𠂔	对 dui
QZ-1400	巾	带 dai
QZ-1407	𠂔	飞 fei
QZ-1200	𠂔	觔节 jin jie
QZ-1526	軟	软 ruan
QZ-433	豕	逐 zhu
QZ-1248	攴	收 shou
QZ-1235	𠂔	入杀 ru sha
QZ-1356	𠂔	变 bian
QZ-1374	毛	尾 wei
QZ-1194	𠂔	附弦 fu xian
QZ-1350	冬	终 zhong
QZ-1148	達	闷 ta
QZ-457	樂	揞 li
QZ-1249	么	么 me
QZ-458	𠂔	捋 lv
QZ-459	票	標 biao
QZ-473	𠂔	双勾 shuang gou
QZ-460	𠂔	撩 liao
QZ-40	𠂔	打挑 da tiao

ID	Glyph	Name
QZ-39	𠂔	挑打 tiao da
QZ-41	𠂔	勾打 gou da
QZ-46	𠂔	双打 shuang da
QZ-44	𠂔	弹打 tan da
QZ-454	𠂔	覆打 fu da
QZ-465	攴	撒 sa
QZ-5035	𠂔	散摘 san zhai
QZ-1524	𠂔	摘至 zhai zhi
QZ-51	𠂔	节摘 jie zhai
QZ-52	𠂔	连摘 lian zhai
QZ-466	𠂔	捌 lie
QZ-363	念	捻 nian
QZ-453	占	拈 nian
QZ-60	症	疾历 ji li
QZ-55	𠂔	急历 ji li
QZ-61	𠂔	缓历 huan li
QZ-56	𠂔	双历 shuang li
QZ-59	𠂔	摘历 zhai li
QZ-21	𠂔	历擘 li pi(bo)
QZ-62	𠂔	拂历 fu li

ID	Glyph	Name
QZ-194	𠂔	倒半轮 dao ban lun
QZ-189	𠂔	背轮 bei lun
QZ-324	𠂔	弹/单弹 tan/dan tan
QZ-344	𠂔	二弹 er tan
QZ-343	𠂔	慢弹 man tan
QZ-345	𠂔	急弹 ji tan
QZ-341	𠂔	连弹 lian tan
QZ-342	𠂔	齐弹 qi tan
QZ-227	𠂔	复圆 fu yuan
QZ-259	𠂔	双拨刺 shuang bo la
QZ-260	𠂔	双弹拨刺 shuang tan bo la
QZ-356	𠂔	缓𠂔 huan chuo
QZ-350	𠂔	反𠂔 fan chuo
QZ-351	𠂔	背𠂔 bei chuo
QZ-172	𠂔	打锁 da suo
QZ-154	𠂔	一锁 yi suo
QZ-5037	𠂔	急锁 ji suo
QZ-173	𠂔	缓锁 huan suo
QZ-169	𠂔	圆锁 yuan suo

ID	Glyph	Name
QZ-1413	𠂔	叠 die
QZ-448	𠂔	叠指 die zhi
QZ-132	𠂔	散𠂔 san juan
QZ-119	𠂔	倚𠂔 yi juan
QZ-115	𠂔	慢𠂔 man juan
QZ-114	𠂔	急𠂔 ji juan
QZ-140	𠂔	单𠂔 dan juan
QZ-138	𠂔	散连𠂔 san lian juan
QZ-108	𠂔	累𠂔 lei juan
QZ-110	𠂔	双𠂔 shuang juan
QZ-104	𠂔	分𠂔 fen juan
QZ-141	𠂔	正𠂔 zheng juan
QZ-116	𠂔	拨刺𠂔 bo la juan
QZ-379	𠂔	牵 qian
QZ-380	𠂔	双牵 shuang qian
QZ-381	𠂔	疾牵 ji qian
QZ-382	𠂔	缓牵 huan qian
QZ-383	𠂔	牵挑 qian tiao
QZ-195	𠂔	扶 fu

ID	Glyph	Name	ID	Glyph	Name
QZ-209	𠂔	半挑扶 ban tiao fu	QZ-403	𠂔	裂帛声 lie bo sheng
QZ-198	𠂔	缓全扶 huan quan fu	QZ-387	斤	断 duan
QZ-208	𠂔	缓半扶 huan ban fu	QZ-5034	斤	折竹声 zhe zhu sheng
QZ-197	疾	疾全扶 ji quan fu	QZ-396	𠂔	扫 sao
QZ-199	𠂔	节全扶 jie quan fu	QZ-397	𠂔	反扫 fan sao
QZ-455	𠂔	搂 lou	QZ-386	叶	叶 ye
QZ-226	𠂔	缓圆搂 huan yuan lou	QZ-385	坐	挫 cuo
QZ-430	𠂔	逆间勾 ni jian gou	QZ-471	𠂔	度弦声 du xian sheng
QZ-426	𠂔	反间勾 fan jian gou	QZ-22	𠂔	摘擘 zhai pi(bo)
QZ-424	𠂔	覆间勾 fu jian gou	QZ-5001	𠂔	摘历擘 zhai li pi(bo)
QZ-427	𠂔	缓间勾 huan jian gou	QZ-354	𠂔	摘历擘𠂔 zhai li pi(bo) chuo
QZ-432	𠂔	挑间勾 tiao jian gou	QZ-23	𠂔	摘历𠂔擘 zhai li chou pi(bo)
QZ-425	𠂔	拙间勾 zhuo jian gou	QZ-1081	𠂔	疾上 ji shang
QZ-429	𠂔	散间勾 san jian gou	QZ-1149	𠂔	硬 ying
QZ-431	𠂔	展转间勾 zhan zhuan jian gou	QZ-816	佳	进 jin
QZ-474	𠂔	指转 zhi zhuan	QZ-1086	午	许 hu
QZ-400	𠂔	截竹声 jie zhu sheng	QZ-1093	𠂔	虚汧 xu hu
QZ-443	𠂔	截刺 jie la	QZ-1057	𠂔	二引 er yin
QZ-391	𠂔	拨杀 bo sha	QZ-1083	𠂔	疾下 ji xia

ID	Glyph	Name	ID	Glyph	Name
QZ-1225	𢇛	退下 tui xia	QZ-1131	𢇛	绰抑 chuo yi
QZ-1085	𢇛	上下 shang xia	QZ-516	𢇛	绰注 chuo zhu
QZ-817	𢇛	退 tui	QZ-511	𢇛	双注 shuang zhu
QZ-818	𢇛	硬退 ying tui	QZ-513	𢇛	远注 yuan zhu
QZ-1232	𢇛	滑 hua	QZ-508	𢇛	飞注 fei zhu
QZ-821	𢇛	复 fu	QZ-510	𢇛	虚注 xu zhu
QZ-832	𢇛	双进复 shuang jin fu	QZ-319	𢇛	度绰 du chuo
QZ-833	𢇛	虚进复 xu jin fu	QZ-788	𢇛	次撞 ci zhuang
QZ-834	𢇛	小虚进复 xiao xu jin fu	QZ-810	𢇛	退撞 tui zhuang
QZ-851	𢇛	双退复 shuang tui fu	QZ-786	𢇛	走撞 zou zhuang
QZ-493	𢇛	大绰 da chuo	QZ-785	𢇛	对撞 dui zhuang
QZ-502	𢇛	复绰 fu chuo	QZ-804	𢇛	小虚撞 xiao xu zhuang
QZ-492	𢇛	三绰 san chuo	QZ-813	𢇛	退复撞 tui fu zhuang
QZ-497	𢇛	远绰 yuan chuo	QZ-795	𢇛	急双撞 ji shuang zhuang
QZ-495	𢇛	飞绰 fei chuo	QZ-798	𢇛	缓撞 huan zhuang
QZ-1174	𢇛	绰挹 chou yi	QZ-796	𢇛	慢撞 man zhuang
QZ-499	𢇛	急绰 ji chuo	QZ-797	𢇛	慢双撞 man shuang zhuang
QZ-500	𢇛	缓绰 huan chuo	QZ-672	𢇛	大实吟 da shi yin
QZ-1129	𢇛	抑 yi	QZ-671	𢇛	急实吟 ji shi yin

ID	Glyph	Name
QZ-641	得	微吟 wei yin
QZ-659	藏	藏吟 cang yin
QZ-675	雙	双注吟 shuang zhu yin
QZ-630	亨	撞吟 zhuang yin
QZ-664	今	入吟 tu yin
QZ-667	𠂔	就吟 jiu yin
QZ-1424	古	苦 ku
QZ-668	苦	苦吟 ku yin
QZ-679	𠂔	复吟 fu yin
QZ-657	𠂔	推吟 tui yin
QZ-660	虚	虚吟 xu yin
QZ-673	𠂔	急双吟 ji shuang yin
QZ-670	𠂔	慢吟 man yin
QZ-674	𠂔	慢双吟 man shuang yin
QZ-1145	而	𠂔 nao
QZ-732	𠂔	放𠂔 fang nao
QZ-733	𠂔	圆𠂔 yuan nao
QZ-719	𠂔	走𠂔 zou nao
QZ-742	𠂔	陡𠂔 dou nao

ID	Glyph	Name
QZ-737	𠂔	蓄𠂔 xu nao
QZ-761	𠂔	回𠂔 hui nao
QZ-770	𠂔	慢双𠂔 man shuang nao
QZ-769	𠂔	急双𠂔 ji shuang nao
QZ-767	𠂔	急大𠂔 ji da nao
QZ-768	𠂔	慢大𠂔 man da nao
QZ-771	𠂔	急撞𠂔 ji zhuang nao
QZ-775	𠂔	入𠂔 ru nao
QZ-776	𠂔	出𠂔 chu nao
QZ-744	𠂔	虚𠂔 xu nao
QZ-869	史	使 shi nao
QZ-863	𠂔	注逗 zhu dou
QZ-1092	𠂔	软逗 ruan dou
QZ-868	迎	迎 ying
QZ-676	𠂔	唤吟 huan yin
QZ-1228	𠂔	荡 dang
QZ-1146	𠂔	荡指 dang zhi
QZ-1353	𠂔	走 zou
QZ-1170	𠂔	道起 yu qi

ID	Glyph	Name	ID	Glyph	Name
QZ-461	𠂔	撇 pie	QZ-988	𠂔	拾起 shi qi
QZ-1246	𠂔	押 ya	QZ-926	𠂔	虚搯起 xi qia(tao) qi
QZ-968	𠂔	推起 tui qi	QZ-1182	𠂔	三搯 san qia(tao)
QZ-1133	𠂔	兜（挽） dou	QZ-924	𠂔	反搯起 fan qia(tao) qi
QZ-1173	邑	挹 yi	QZ-1210	𠂔	过 guo
QZ-902	𠂔	注掩 zhu yan	QZ-937	𠂔	注对起 zhu dui qi
QZ-905	𠂔	连掩 lian yan	QZ-944	𠂔	桡搯起 zan qia(tao) qi
QZ-1183	𠂔	掩搯 yan qia(tao)	QZ-946	𠂔	背桡起 bei zan qi
QZ-909	里	点 dian	QZ-1426	𠂔	遊 you
QZ-984	𠂔	虚点起 xu dian qi	QZ-1245	𠂔	括 kuo
QZ-989	𠂔	抓 zhua	QZ-1190	𠂔	研余 yan yu
QZ-986	𠂔	虚兜起 xu dou qi	QZ-1361	𠂔	竖 shu
QZ-987	𠂔	虚勾起 xu gou qi	QZ-1204	𠂔	𠂔(𠂔才豕) zhuo
QZ-979	𠂔	虚起 xu qi	QZ-1153	𠂔	捺 na
QZ-960	𠂔	撞带起 zhuang dai qi	QZ-1095	𠂔	吼 hou
QZ-958	𠂔	搯带起 qia(tao) dai qi	QZ-1046	𠂔	互泛 hu fan
QZ-959	𠂔	注搯带起 zhu qia(tao) dai qi	QZ-1044	𠂔	牙泛 ya fan
QZ-967	𠂔	爬起 pa qi	QZ-1079	𠂔	泛按 fan an
QZ-977	𠂔	𠂔起 wo qi	QZ-188	𠂔	双轮 shuang lun

ID	Glyph	Name
QZ-186	𢇛	索轮 suo lun
QZ-235	𢇛	注索铃 zhu suo ling
QZ-1023	𢇛	绰合 chuo he
QZ-1029	𢇛	起合 qi he
QZ-1018	𢇛	爬合 pa he
QZ-1016	𢇛	撇合 pie he
QZ-1049	𢇛	虚泛 xu fan
QZ-70	𢇛	搯拂历三声 qia(tao) fu li san sheng
QZ-298	𢇛	搯撮 qia(tao) cuo
QZ-304	𢇛	搯撮四声 qia(tao) cuo si sheng
QZ-308	𢇛	搯撮五声 qia(tao) cuo wu sheng
QZ-250	𢇛	搯拨刺 qia(tao) bo la
QZ-257	𢇛	搯拨刺五声 qia(tao) bo la wu sheng
QZ-1355	𢇛	剔如散 ti ru san
QZ-268	𢇛	刺按散 la an san
QZ-264	𢇛	拨按散 bo an san
QZ-1202	𢇛	掇搯 zhuo nuo
QZ-1203	𢇛	啄搯声 zhuo nuo sheng
QZ-978	𢇛	勾起 gou qi

ID	Glyph	Name
QZ-1175	𢇛	屈大 qu da
QZ-1176	𢇛	屈食 qu shi
QZ-1177	𢇛	屈名 qu ming
QZ-33	𢇛	急勾 ji gou
QZ-42	𢇛	散打 san da
QZ-43	𢇛	缓打 huan da
QZ-352	𢇛	勾𢇛 gou chuo
QZ-353	𢇛	擘𢇛 pi(bo) chuo
QZ-355	𢇛	𢇛挑 chuo tiao
QZ-357	𢇛	打𢇛 da chuo
QZ-174	𢇛	醉锁 zui suo
QZ-117	𢇛	醉涓 zui juan
QZ-113	𢇛	短涓 duan juan
QZ-118	𢇛	长涓 chang juan
QZ-200	𢇛	𢇛扶 juan fu
QZ-447	𢇛	却轮指 que lun zhi
QZ-187	𢇛	走轮 zou lun
QZ-1132	𢇛	散抑 san yi
QZ-1195	𢇛	绰搯 chuo nuo

ID	Glyph	Name
QZ-1048	𦵑	前后泛 qian hou fan
QZ-778	𦵒	通獠 tong nou
QZ-1181	𦵓	挹搯 yi qian(tao)
QZ-1189	𦵔	食勾 shi gou
QZ-1196	𦵕	折腰敦 zhe yao dun
QZ-1197	𦵖	藏头敦 can tou dun
QZ-469	𦵗	绰声 chuo sheng
QZ-1199	𦵘	节 jie
QZ-1529	𦵙	五度𦵙 wu du juan
QZ-112	𦵚	摘打涓 zhai da juan
QZ-107	𦵛	绰涓 chuo juan
QZ-1507	𦵜	食中名抹勾打五 shi zhong ming mo gou da wu
QZ-77	𦵝	拨拂 bo fu
QZ-26	𦵞	托起 tuo qi
QZ-47	𦵟	历打 li da
QZ-109	𦵠	细涓 xi juan
QZ-272	𦵡	按伏 an fu
QZ-289	𦵢	大反撮 da fan cuo
QZ-428	𦵣	擘轮间勾 pi(bo) lun jian gou

ID	Glyph	Name
QZ-512	𦵤	对注 dui zhu
QZ-518	𦵥	按注 an zhu
QZ-614	𦵦	撞遊吟 zhuang you yin
QZ-654	𦵧	活吟 huo yin
QZ-655	𦵨	放吟 fang yin
QZ-656	𦵩	紧吟 jin yin
QZ-666	𦵪	分吟 fen yin
QZ-756	𦵫	飘獠 piao nao
QZ-757	𦵬	寔獠 shi nao
QZ-758	𦵭	半獠 ban nao
QZ-759	𦵮	徽獠 hui nao
QZ-903	𦵯	急掩 ji yan
QZ-906	𦵰	连掩带 lian yan dai
QZ-939	𦵱	跪对起 gui dui qi
QZ-1024	𦵲	正合 zheng he
QZ-1027	𦵳	远合 yuan he
QZ-1028	𦵴	息合 xi he
QZ-1050	𦵵	爪泛 zhua fan
QZ-1076	𦵶	单按 dan an

ID	Glyph	Name
QZ-1078	𠂔	三按 san an
QZ-1091	𠂔	小浒 xiao hu
QZ-1169	𠂔	大掉 da diao
QZ-1209	𠂔	𠂔 wo
QZ-1213	𠂔	按弦 an xian
QZ-1224	𠂔	双绰放 shuang chuo fang
QZ-1236	𠂔	进音 jin yin
QZ-1237	𠂔	退音 tui yin
QZ-1239	𠂔	放下 fang xia
QZ-1240	𠂔	对勾 dui gou
QZ-1241	𠂔	推放 tui fang
QZ-1242	𠂔	带放 dai fang
QZ-1243	𠂔	点下 dian xia
QZ-1244	𠂔	中下 zhong xia
QZ-1247	𠂔	传 chuan
QZ-1272	𠂔	慢作 man zuo
QZ-1305	𠂔	皆急 jie ji
QZ-1321	𠂔	再 zai
QZ-1397	𠂔	累 lei

ID	Glyph	Name
QZ-1409	𠂔	细飞 xi fei
QZ-1410	𠂔	飞上 fei shang
QZ-1411	𠂔	飞下 fei xia
QZ-1412	𠂔	止 zhi
QZ-1414	𠂔	背 bei
QZ-1415	𠂔	细 xi
QZ-1517	𠂔	过弦 guo xian
QZ-1523	𠂔	对趲 dui zan
QZ-5018	𠂔	序终 xu zhong
QZ-5002	𠂔	大序终 da xu zhong
QZ-5017	𠂔	小序终 xiao xu zhong
QZ-5007	𠂔	乱声终 luan sheng zhong
QZ-5024	𠂔	吟终 yin zhong
QZ-5027	𠂔	引终 yin zhong
QZ-5028	𠂔	正声终 zheng sheng zhong
QZ-791	𠂔	倒撞 dao zhuang
QZ-792	𠂔	飞撞 fei zhuang
QZ-809	𠂔	进撞 jin zhuang

