TikZ-Bagua Package

WANG Xu
cwangx@hotmail.com

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1 Introduction

The `TikZ-Bagua` package mainly using `TikZ`, by `xparse`, `xstring`, `bitset` and `xintexpr`, defines the Grand Terminus [1] `\taiji` and `\xtaiji` for newer method, `\liangyi` for the Two Elementary Forms, `\sixiang` for the Four Emblematic Symbols, `\bagua` for the Eight Trigrams and `\Bagua` for Sixty-four Hexagrams, in *The I Ching*, without require special fonts.

2 Usage methods

The last argument of all defined macros is optional `scale`, and default 1.

2.1 The Grand Terminus (the *Taiji*)

Thanks to netizens, the default is same as in ancient books without *the Fish Eyes*, show its by macro with star. For reason that there are some formed by semi-circles, so add `\xtaiji` for it, with (or without) star.

`\taiji [<scale>]`, `\taiji* [<scale>]`.
`\xtaiji [<scale>]`, `\xtaiji* [<scale>]`.
The four above macros show ☯ ☯ ☯ ☯ .

2.2 The Two Elementary Forms (the *Liangyi*)

`\liangyi {<bin>} [<scale>]`.

We can obtain ⚊ and ⚋ by `\liangyi{<bin>}` getting 1 and 0, respectively.

2.3 The Four Emblematic Symbols (the *Sixiang*)

`\sixiang {<bin>} [<scale>]`, `\sixiang* {<dec>} [<scale>]`.

The Four Emblematic Symbols obtained from `\sixiang{<bin>}` by getting the binary number of $3, 2, 1, 0$, and `\sixiang*{<dec>}` for decimal.

11	10	01	00
⚌	⚎	⚍	⚏
3	2	1	0

2.4 The Eight Trigrams (the *Bagua* with three lines)

`\bagua {<bin>} [<scale>]`, `\bagua* {<dec>} [<scale>]`.

The Eight Trigrams obtained from `\bagua{<bin>}` by getting the binary number of $7, 6, \ldots, 0$, and `\bagua*{<dec>}` for decimal.

111	110	101	100	011	010	001	000
							
7	6	5	4	3	2	1	0

2.5 The Sixty-four Hexagrams (the *Bagua* with six lines)

`\Bagua [<2,8>]{<bin,oct>} [<scale>]`, `\Bagua* {<dec>} [<scale>]`.

The Sixty-four Hexagrams obtained from `\Bagua{<bin>}` by getting the binary number of $63, 62, \ldots, 0$, `\Bagua[8]{<oct>}` for octal number $77, 76, \ldots, 0$, and `\bagua*{<dec>}` for decimal.

We list all the Sixty-four Hexagrams here, in which the above number is binary, the below is decimal and octal.

111111	111110	111101	111100	111011	111010	111001	111000
							
63 77	62 76	61 75	60 74	59 73	58 72	57 71	56 70
110111	110110	110101	110100	110011	110010	110001	110000
							
55 67	54 66	53 65	52 64	51 63	50 62	49 61	48 60
101111	101110	101101	101100	101011	101010	101001	101000
							
47 57	46 56	45 55	44 54	43 53	42 52	41 51	40 50
100111	100110	100101	100100	100011	100010	100001	100000
							
39 47	38 46	37 45	36 44	35 43	34 42	33 41	32 40
011111	011110	011101	011100	011011	011010	011001	011000
							
31 37	30 36	29 35	28 34	27 33	26 32	25 31	24 30
010111	010110	010101	010100	010011	010010	010001	010000
							
23 27	22 26	21 25	20 24	19 23	18 22	17 21	16 20
001111	001110	001101	001100	001011	001010	001001	001000
							
15 17	14 16	13 15	12 14	11 13	10 12	9 11	8 10
000111	000110	000101	000100	000011	000010	000001	000000
							
7 07	6 06	5 05	4 04	3 03	2 02	1 01	0 00

3 Versions

v1.01 2022.08.04

Revise `\taiji` to show the Grand Terminus in ancient books, add `\xtaiji` for later, fix some bugs.

v1.0 2021.10.17

Release `TikZ-Bugua` v1.0.

References

[1] James Legge (Trans.). The I Ching, Second Edition. Dover Publications, Inc.