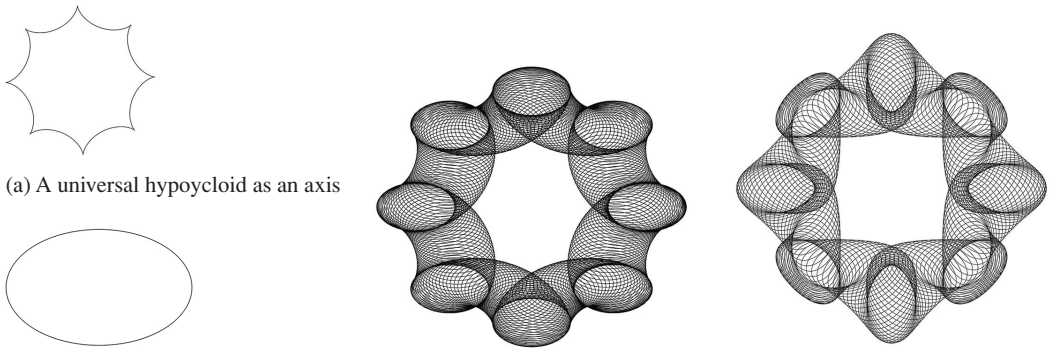
Table 11. Universal hypocycloid used as axes and hypocycloid used as motifs ($a_3 = 24$, $b_3 = 3$, $c_3 = 1$, $a_1 = 5\tau$, $b_1 = 5.0$, $f_1 : 0 \sim 660\pi$, $f_2 : 0 \sim 490\pi$).

	H	d_1	s_1	j	d_2	s_2
(c)	20	0.125	0.013π	10	—	—
(d)	30	0.125	0.013π	10	0.125	0.013π



(a) A universal hypoycloid as an axis

(b) A golden ellipse as a motif

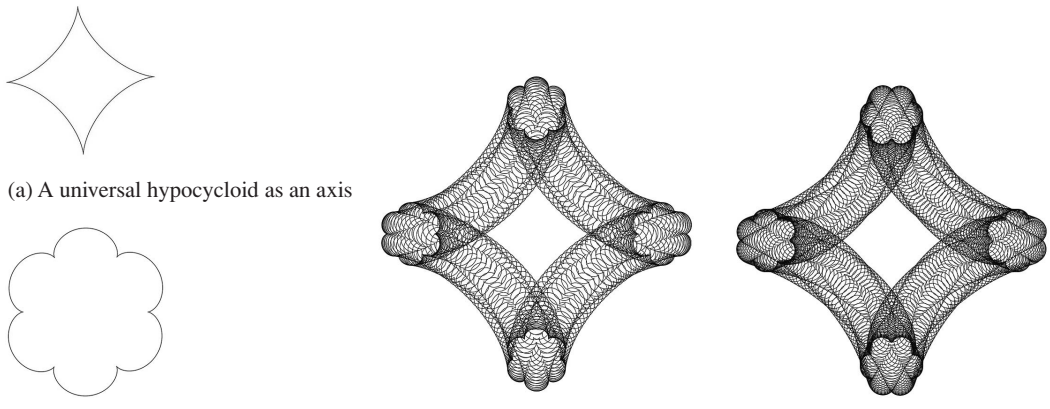
(c) A Type A geometric pattern

(d) A Type B geometric pattern

Fig. 16. Geometric patterns using combinations of universal hypocycloid used as axes and golden ellipse used as motifs.

Table 12. Universal hypocycloid used as axes and epicycloid used as motifs ($a_3 = 32$, $b_3 = 8$, $c_3 = 1$, $a_2 = 6\tau$, $b_2 = 1.0$, $f_1 : 0 \sim 360\pi$, $f_2 : 0 \sim 500\pi$).

	h	d_1	s_1	j	d_2	s_2
(c)	30	0.5	0.017π	30	—	—
(d)	25	0.25	0.01π	25	0.25	0.01π



(a) A universal hypocycloid as an axis

(b) An epcycloid as a motif

(c) A Type A geometric pattern

(d) A Type B geometric pattern

Fig. 17. Geometric patterns using combinations of universal hypocycloid used as axes and epicycloid used as motifs.

Type B geometric pattern by Formula 32.

$$\begin{aligned} x_{v12} &= (a_3 - b_3)\cos g_1 - b_2 \cos(a_3 - b_3)g_1/b_3 + x_2 \\ y_{v12} &= (a_3 - b_3)\sin g_1 - b_2 \sin(a_3 - b_3)g_1/b_3 + y_2 \\ z_{v12} &= c_3 \sin g_1. \end{aligned} \tag{32}$$

Type A geometric patterns were created by restructuring Formula 1 with Formula 31, and a Type B geometric patterns by restructuring Formula 4 with Formula 32. Figure 16c shows a Type A geometric pattern using golden ellipse as a motif. Figure 16d shows a Type B geometric pattern using epicycloid as a motif.

b. Using epicycloid as motifs (B_1-B_2)

Type A geometric patterns were created by restructuring Formula 14 with Formula 31, and Type B geometric patterns by restructuring Formula 17 with Formula 32.

Figure 17c shows a Type A geometric pattern using epicycloid as a motif. Figure 16d shows a Type B geometric pattern using epicycloid as a motif.

c. Using hypocycloid as motifs (B_1-C_2)

Type A geometric patterns were created by restructuring Formula 19 with Formula 31, and Type B geometric patterns by restructuring Formula 21 with Formula 32.