花の 3D-面グラフ

n = 7
ml = 2
m2 = 3　m3 = 4
a1 = 0.4　a2 = 0.1
p = 0.85
q=7.5　v = 1.2

代入定義

b2 = 0.21
b3 = 0.15
b4 = 0.09

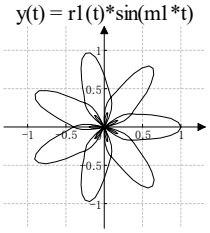
関数定義

r1(t)=a1+(1-a1-a2)cos(nt)+a2cos(3nt)
c(u)=1+u*cos(p-u/q)
s(u)=u*sin(p-u/q)
r2(t)=b2*cos(2n*t)
r3(t)=b3*cos(3n*t)
r4(t)=b4*cos(4n*t)

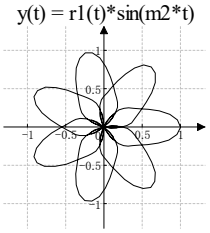
1	x(t,u) = c(u)*r1(t)*cos(ml*t) y(t,u) = c(u)*r1(t)*sin(ml*t) z(t,u) = v*s(u)*r1(t)
2	x(t,u) = c(u)*r1(t)*cos(m2*t) y(t,u) = c(u)*r1(t)*sin(m2*t) z(t,u) = v*s(u)*r1(t)
3	x(t,u) = c(u)*r1(t)*cos(m3*t) y(t,u) = c(u)*r1(t)*sin(m3*t) z(t,u) = v*s(u)*r1(t)
4	x(t,u) = c(u)*r1(t)*cos(ml*t) y(t,u) = c(u)*r1(t)*sin(ml*t) z(t,u) = v*s(u)*(r1(t)+r2(t))
5	x(t,u) = c(u)*r1(t)*cos(m2*t) y(t,u) = c(u)*r1(t)*sin(m2*t) z(t,u) = v*s(u)*(r1(t)+r2(t))
6	x(t,u) = c(u)*r1(t)*cos(m3*t) y(t,u) = c(u)*r1(t)*sin(m3*t) z(t,u) = v*s(u)*(r1(t)+r2(t))
7	x(t,u) = c(u)*r1(t)*cos(ml*t) y(t,u) = c(u)*r1(t)*sin(ml*t) z(t,u) = v*s(u)*(r1(t)–r2(t))
8	x(t,u) = c(u)*r1(t)*cos(m2*t) y(t,u) = c(u)*r1(t)*sin(m2*t) z(t,u) = v*s(u)*(r1(t)–r2(t))
9	x(t,u) = c(u)*r1(t)*cos(m3*t) y(t,u) = c(u)*r1(t)*sin(m3*t) z(t,u) = v*s(u)*(r1(t)–r2(t))
10	x(t,u) = c(u)*r1(t)*cos(ml*t) y(t,u) = c(u)*r1(t)*sin(ml*t) z(t,u) = v*s(u)*(r1(t)+r3(t))
11	x(t,u) = c(u)*r1(t)*cos(m2*t) y(t,u) = c(u)*r1(t)*sin(m2*t) z(t,u) = v*s(u)*(r1(t)+r3(t))
12	x(t,u) = c(u)*r1(t)*cos(m3*t) y(t,u) = c(u)*r1(t)*sin(m3*t) z(t,u) = v*s(u)*(r1(t)+r3(t))
13	x(t,u) = c(u)*r1(t)*cos(ml*t) y(t,u) = c(u)*r1(t)*sin(ml*t) z(t,u) = v*s(u)*(r1(t)–r3(t))
14	x(t,u) = c(u)*r1(t)*cos(m2*t) y(t,u) = c(u)*r1(t)*sin(m2*t) z(t,u) = v*s(u)*(r1(t)–r3(t))
15	x(t,u) = c(u)*r1(t)*cos(m3*t) y(t,u) = c(u)*r1(t)*sin(m3*t) z(t,u) = v*s(u)*(r1(t)–r3(t))
16	x(t,u) = c(u)*r1(t)*cos(ml*t) y(t,u) = c(u)*r1(t)*sin(ml*t) z(t,u) = v*s(u)*(r1(t)+r4(t))
17	x(t,u) = c(u)*r1(t)*cos(m2*t) y(t,u) = c(u)*r1(t)*sin(m2*t) z(t,u) = v*s(u)*(r1(t)+r4(t))
18	x(t,u) = c(u)*r1(t)*cos(m3*t) y(t,u) = c(u)*r1(t)*sin(m3*t) z(t,u) = v*s(u)*(r1(t)+r4(t))
19	x(t,u) = c(u)*r1(t)*cos(ml*t) y(t,u) = c(u)*r1(t)*sin(ml*t) z(t,u) = v*s(u)*(r1(t)–r4(t))
20	x(t,u) = c(u)*r1(t)*cos(m2*t) y(t,u) = c(u)*r1(t)*sin(m2*t) z(t,u) = v*s(u)*(r1(t)–r4(t))
21	x(t,u) = c(u)*r1(t)*cos(m3*t) y(t,u) = c(u)*r1(t)*sin(m3*t) z(t,u) = v*s(u)*(r1(t)–r4(t))

サンプルの品揃えで、花弁が 7枚のものを同じ枠組みで作ってみました。 a2 にプラスの数値を加え、花弁の幅を先細りにしてみました。

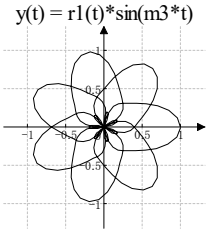
x(t) = r1(t)*cos(ml*t)
y(t) = r1(t)*sin(ml*t)

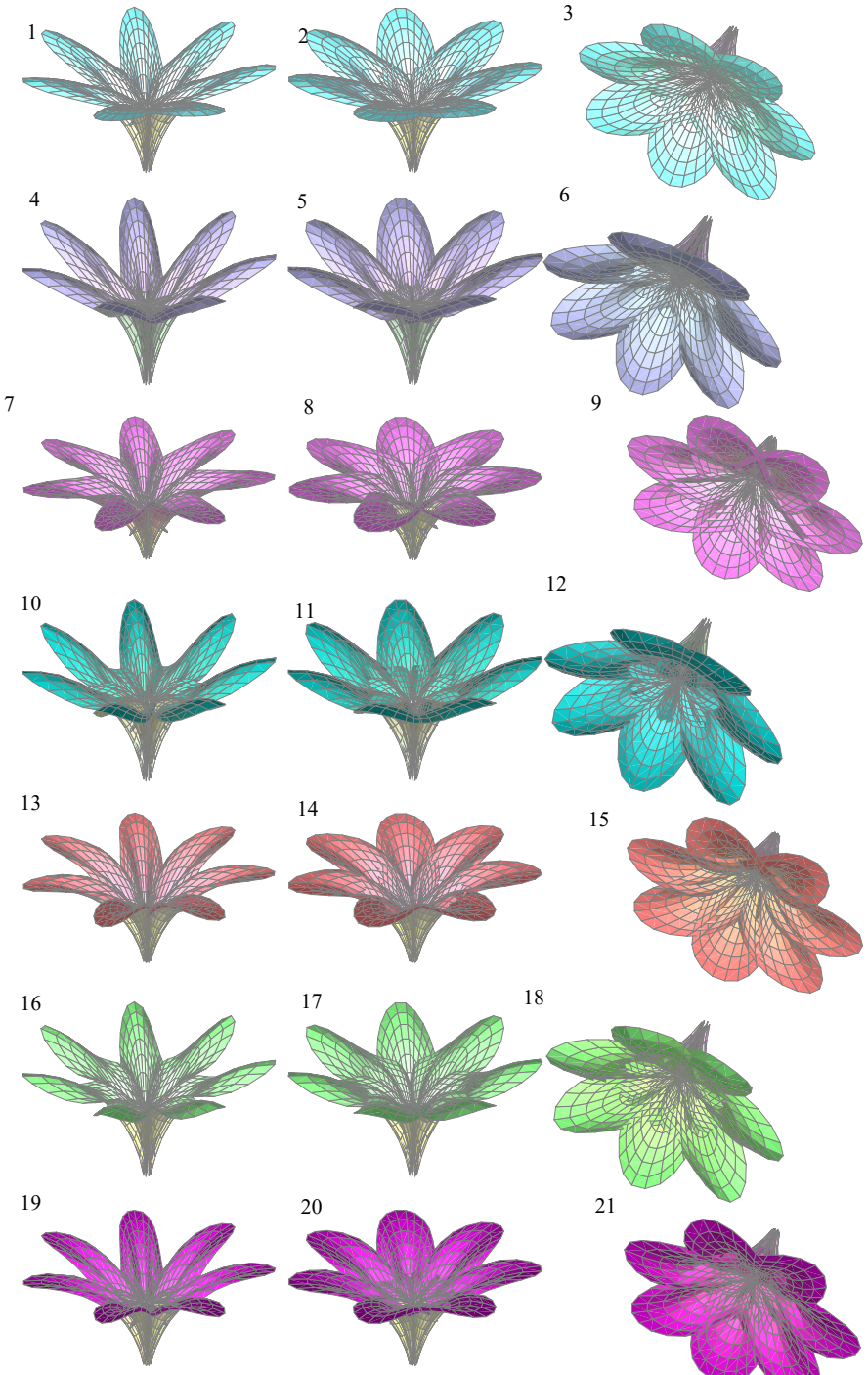


x(t) = r1(t)*cos(m2*t)
y(t) = r1(t)*sin(m2*t)



x(t) = r1(t)*cos(m3*t)
y(t) = r1(t)*sin(m3*t)





22	x(t,u) = c(u)*r1(t)*cos(m1*t) y(t,u) = c(u)*r1(t)*sin(m1*t) z(t,u) = v*s(u)*(r1(t)+r2(t)/2+r3(t)/2)
23	x(t,u) = c(u)*r1(t)*cos(m2*t) y(t,u) = c(u)*r1(t)*sin(m2*t) z(t,u) = v*s(u)*(r1(t)+r2(t)/2+r3(t)/2)
24	x(t,u) = c(u)*r1(t)*cos(m3*t) y(t,u) = c(u)*r1(t)*sin(m3*t) z(t,u) = v*s(u)*(r1(t)+r2(t)/2+r3(t)/2)
25	x(t,u) = c(u)*r1(t)*cos(m1*t) y(t,u) = c(u)*r1(t)*sin(m1*t) z(t,u) = v*s(u)*(r1(t)−r2(t)/2−r3(t)/2)
26	x(t,u) = c(u)*r1(t)*cos(m2*t) y(t,u) = c(u)*r1(t)*sin(m2*t) z(t,u) = v*s(u)*(r1(t)−r2(t)/2−r3(t)/2)
27	x(t,u) = c(u)*r1(t)*cos(m3*t) y(t,u) = c(u)*r1(t)*sin(m3*t) z(t,u) = v*s(u)*(r1(t)−r2(t)/2−r3(t)/2)
28	x(t,u) = c(u)*r1(t)*cos(m1*t) y(t,u) = c(u)*r1(t)*sin(m1*t) z(t,u) = v*s(u)*(r1(t)+r2(t)/2−r3(t)/2)
29	x(t,u) = c(u)*r1(t)*cos(m2*t) y(t,u) = c(u)*r1(t)*sin(m2*t) z(t,u) = v*s(u)*(r1(t)+r2(t)/2−r3(t)/2)
30	x(t,u) = c(u)*r1(t)*cos(m3*t) y(t,u) = c(u)*r1(t)*sin(m3*t) z(t,u) = v*s(u)*(r1(t)+r2(t)/2−r3(t)/2)
31	x(t,u) = c(u)*r1(t)*cos(m1*t) y(t,u) = c(u)*r1(t)*sin(m1*t) z(t,u) = v*s(u)*(r1(t)−r2(t)/2+r3(t)/2)
32	x(t,u) = c(u)*r1(t)*cos(m2*t) y(t,u) = c(u)*r1(t)*sin(m2*t) z(t,u) = v*s(u)*(r1(t)−r2(t)/2+r3(t)/2)
33	x(t,u) = c(u)*r1(t)*cos(m3*t) y(t,u) = c(u)*r1(t)*sin(m3*t) z(t,u) = v*s(u)*(r1(t)−r2(t)/2+r3(t)/2)