Attractors , Number Pi

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abstract

This note presents some attractors and three formulas for pi.

Attractors

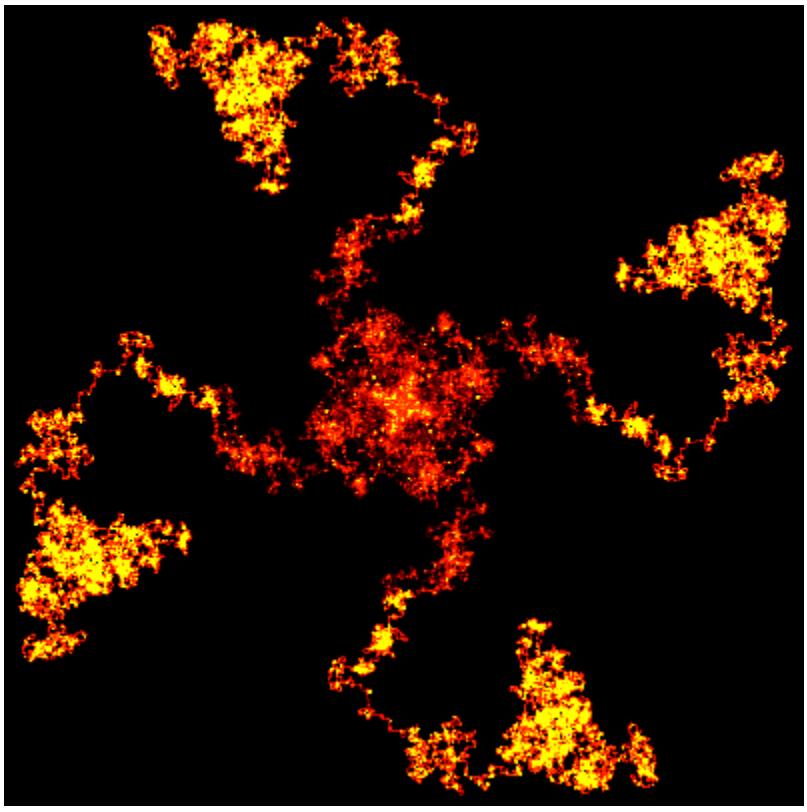

Fig. 1

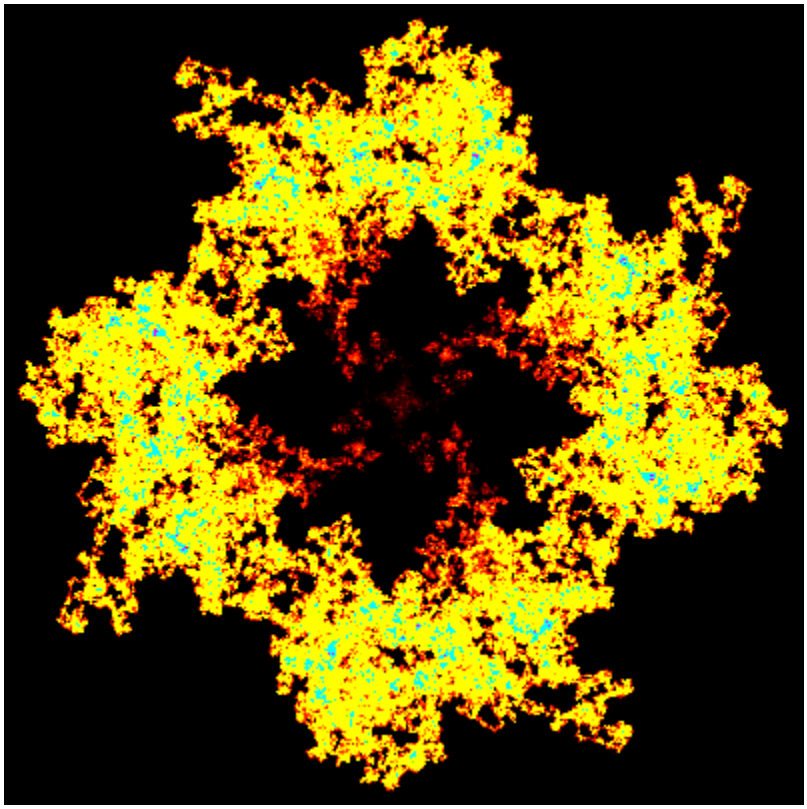

Fig. 2

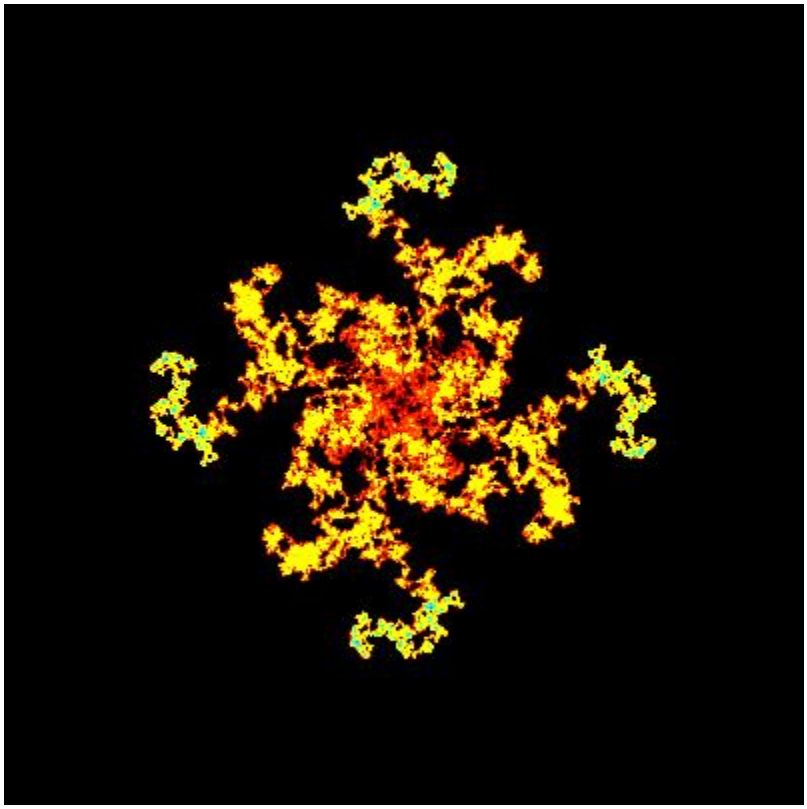

Fig. 3

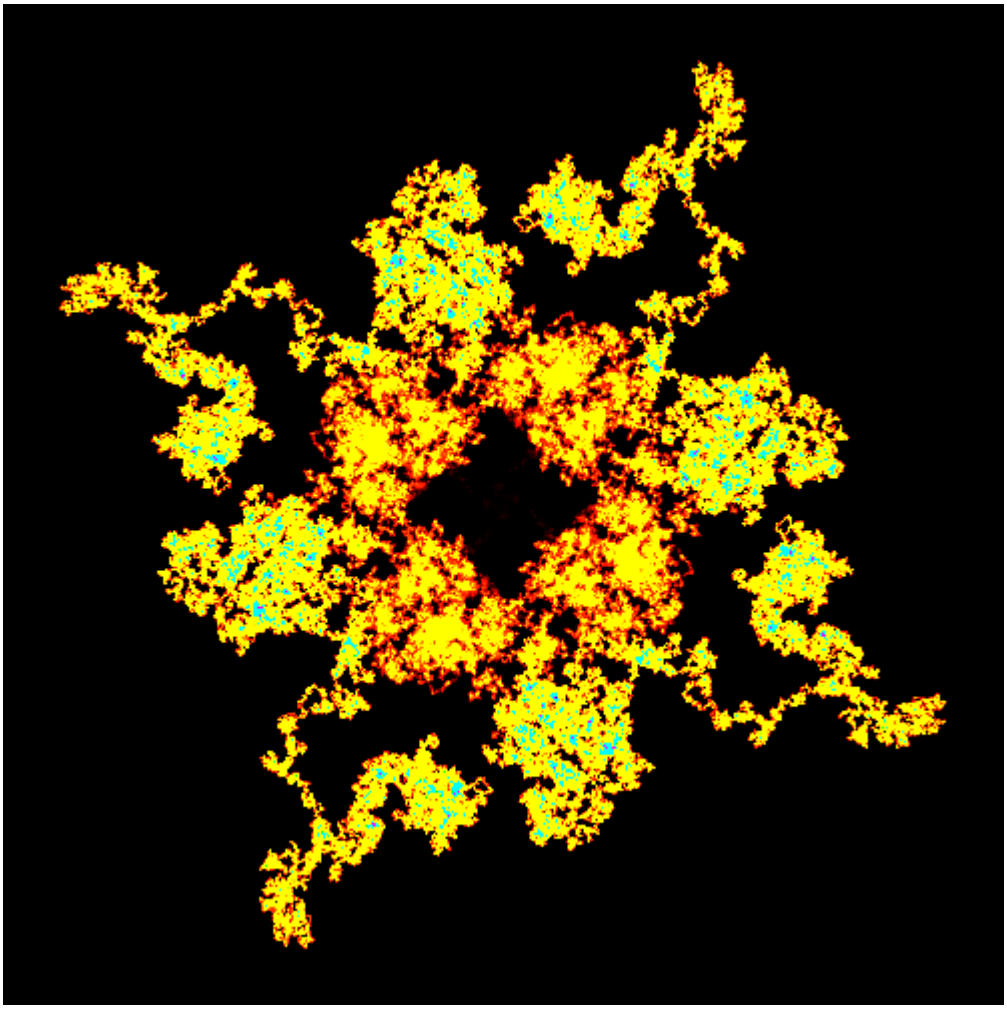

Fig. 4

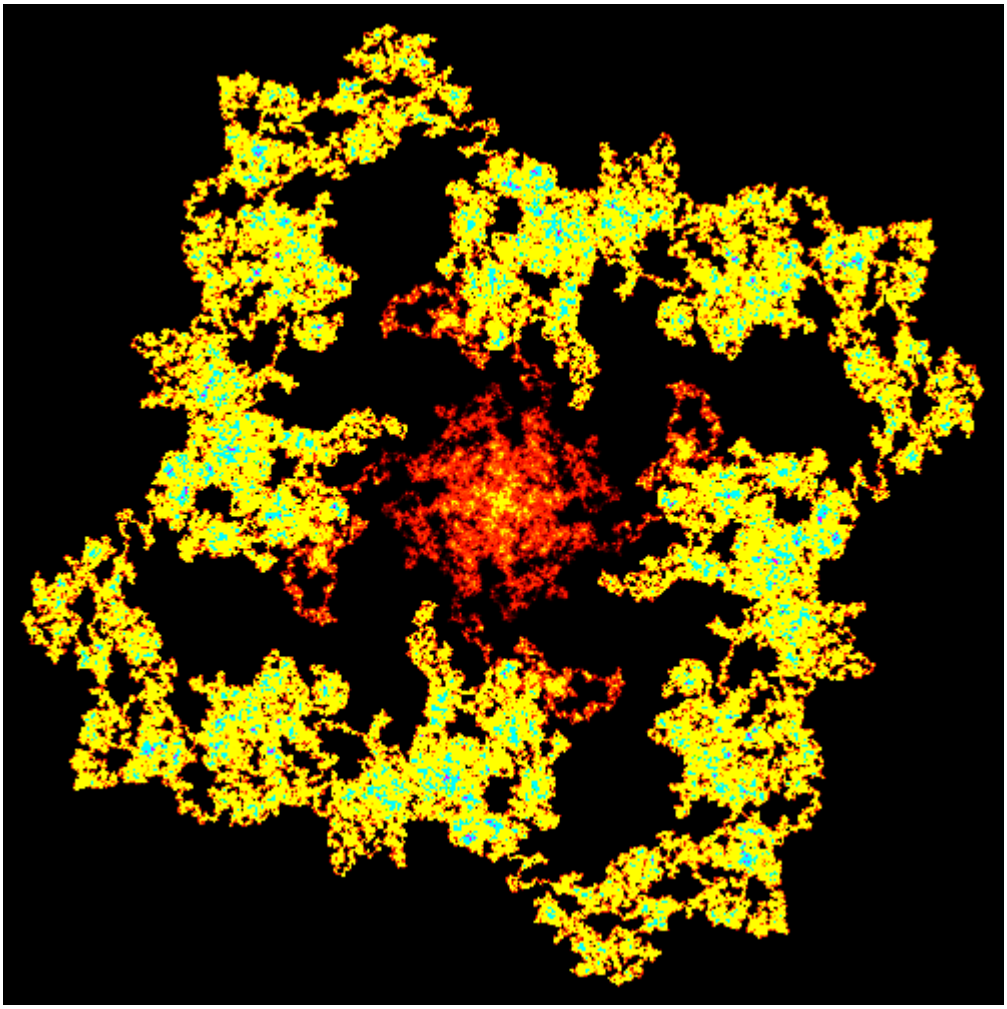

Fig. 5

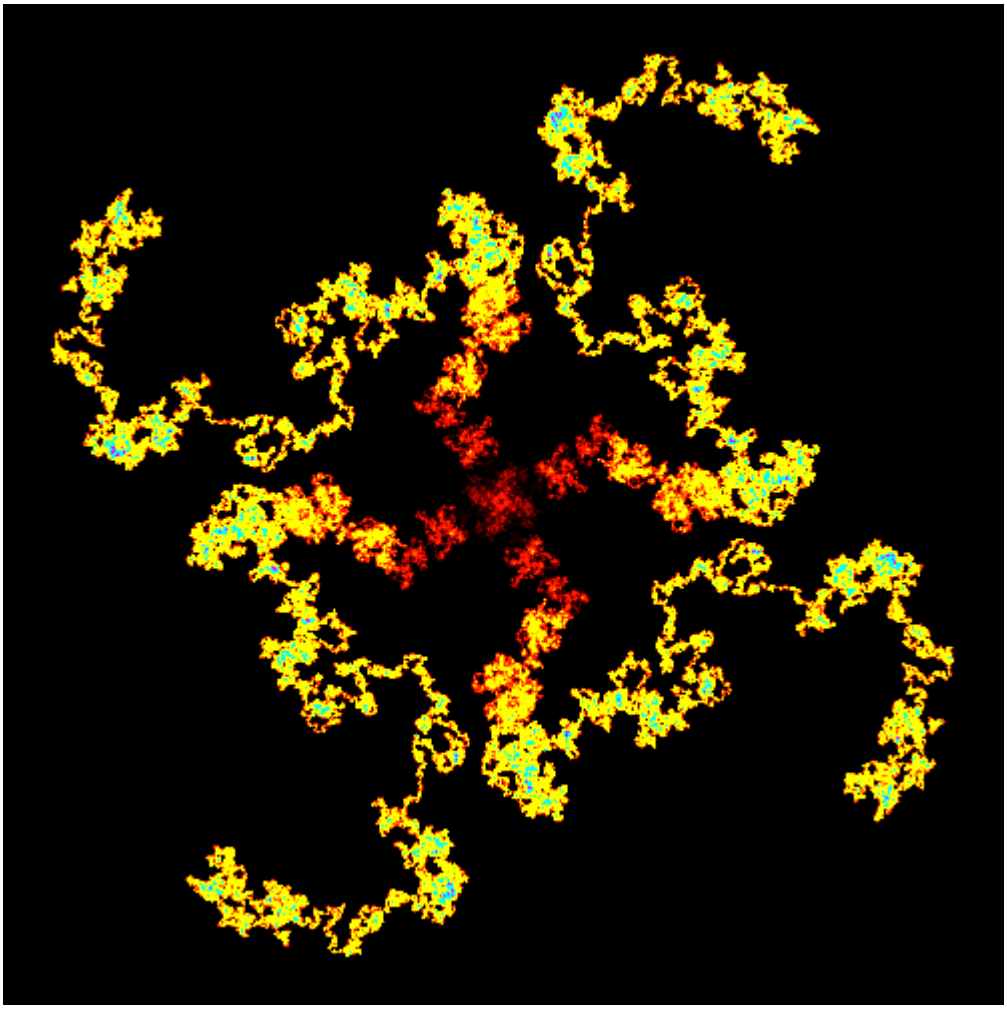

Fig. 6

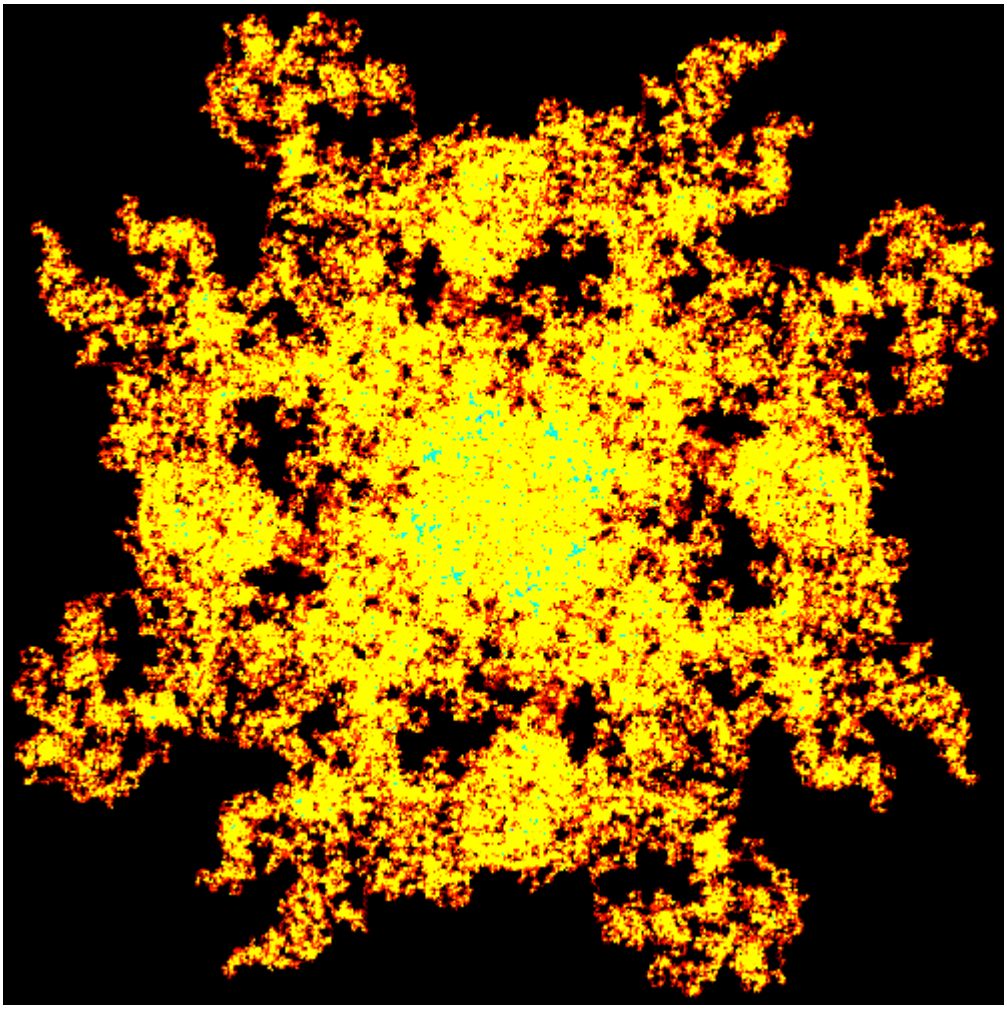

Fig. 7

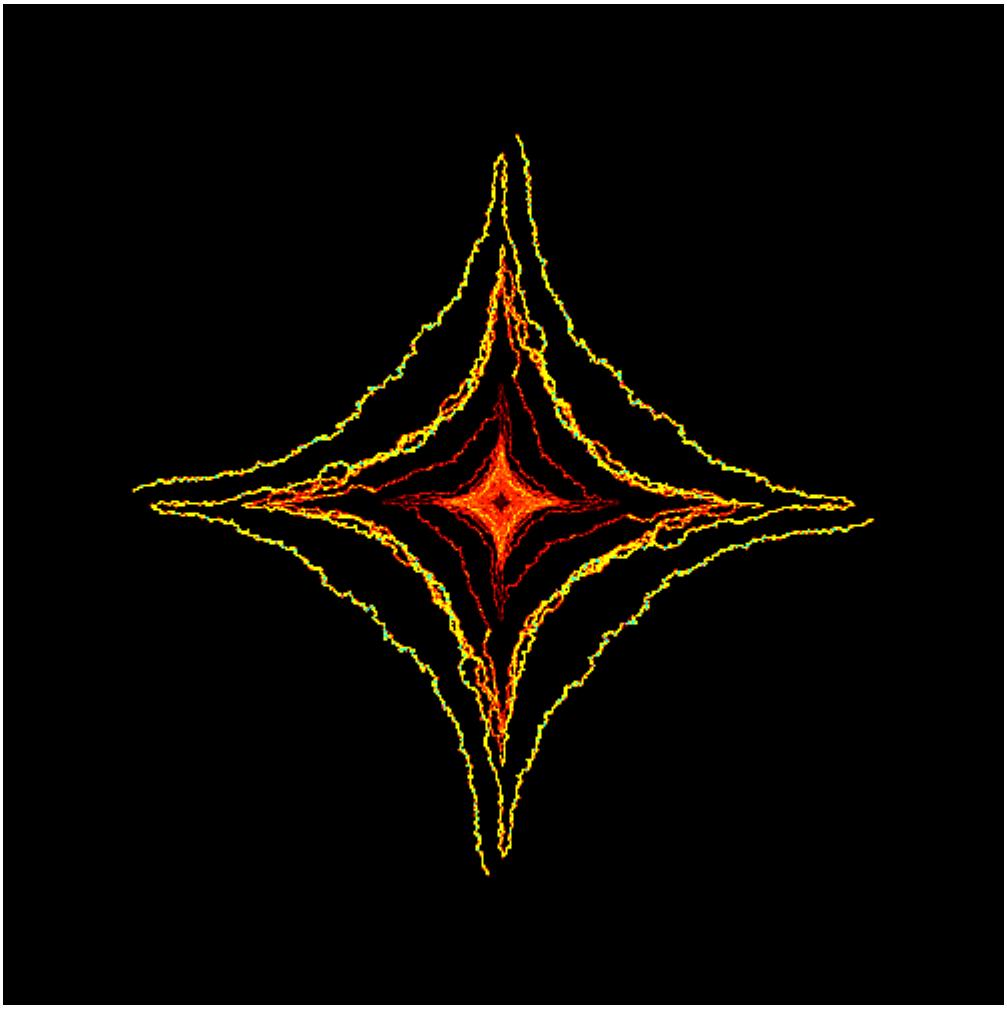

Fig. 8

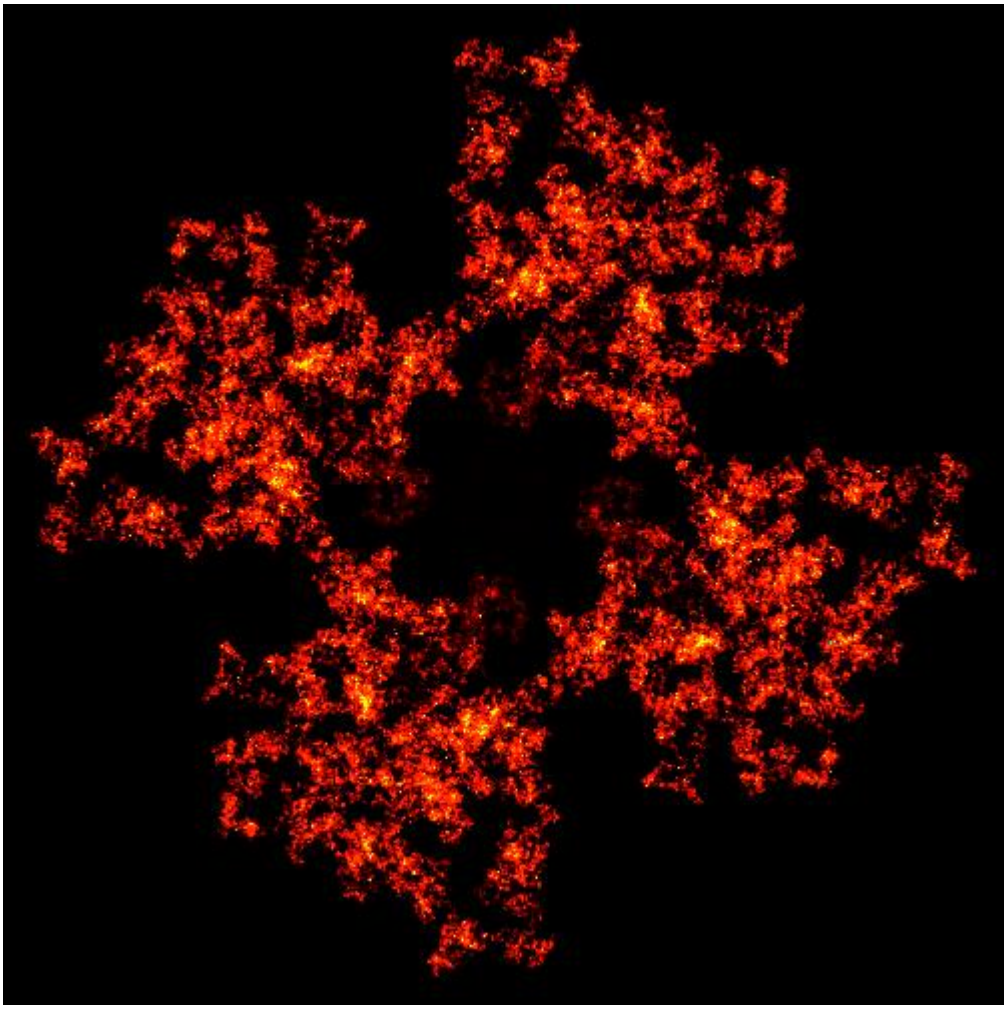

Fig. 9

Pi Formulas

$$\pi = \int_{-1}^{1}\int_{-1}^{1} \frac{1}{\sqrt{2-2x+(2-2x)y^2+y^4}}\,dxdy \tag{1}$$

$$\int_0^1 \left(\sin^{-1}\left(\frac{1-x^{\sqrt{2}}}{\sqrt{2\left(1+x^{2\sqrt{2}}\right)}} \right) + \frac{1}{x^2}\sin^{-1}\left(\frac{x^{\sqrt{2}}}{\sqrt{1+x^{2\sqrt{2}}}} \right) \right) dx = -\frac{\pi}{4} + \frac{\pi}{2}\prod_{n=0}^{\infty}\left(1-\frac{1}{2(2n+1)^2} \right)^{-1} \tag{2}$$

$$\pi = \frac{73356422}{14549535} - 4\int_0^{1/2} \sqrt[20]{x+x\sqrt[10]{x+x\sqrt[10]{x+x\sqrt[10]{x+\ldots}}}}\,dx \tag{3}$$

References

1. K. Falconer, Fractal Geometry: Mathematical Foundations and Applications, John Wiley & Sons , 1990.
2. J. Milnor, On the concept of attractor, Communications in Mathematical Physics, 99 (1985) , pp. 177-195.