Time propagation relations to physical constants in the Belousov–Zhabotinsky Reaction

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1 Derivation

1.1 Basics

The equation of any circle centered at $(0, 0)$ in a 2D-Cartesian coordinate system can be expressed as the following:

$$x^2 + y^2 = r^2 \tag{1}$$

Where r is the radius of the circle. As can be deduced from empirical evidence, we can assume a linear wavefront propagation with respect to time. Let

$$r = \nu t \tag{2}$$

Where ν is the linear wavefront velocity. Hence, after substituting (2) into (1) and rearranging some variables, we can express the time progressed as a function of wave location as such:

$$t = \frac{1}{\nu}\sqrt{x^2 + y^2} \tag{3}$$