

**On the dynamics of a difference equation in the  
form  $z_{n+1} = z_n F(z_{n-1}) + h$ .**

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In this talk, we discuss the dynamics of the difference equation

$$z_{n+1} = z_n F(z_{n-1}) + h, \quad h > 0 \quad \text{and} \quad n \in \mathbb{N}, \quad (1)$$

where  $F(z) = \frac{b}{1-z}$  and  $b > 0$ . In particular, we discuss the global attraction of the equilibrium solutions of Eq. (1). For  $h > 1$ , we relate our problem to the well-known rational difference equation  $x_{n+1} = \frac{p+qx_n}{1+x_{n-1}}$ . Proving the global stability of the positive equilibrium in this rational difference equation was a challenging question that is known as the Y2K problem. We sketch the proof with its key techniques. On the other hand, we describe the interesting dynamics for the case  $0 < h < 1$ , which we consider as an extension to the Y2K problem.