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Dynamics of Social Information Spread through Fractional Derivatives

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Abstract

This study explores a fractional SCP model for rumor propagation. It begins by establishing the boundedness and uniqueness of the model's solutions. Subsequently, the stability of the rumor-free steady state is examined using the fractional Routh-Hurwitz criterion and Lyapunov-based techniques. The work also analyzes the occurrence of a transcritical bifurcation at the equilibrium point without rumors. Lastly, numerical treatments are conducted to support and validate the theoretical outcomes.

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