

A Fractional-Order Model of COVID-19 considering the Fear Effect of the Media and Social Networks on the Community.

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Abstract

Since December 2019, the world has experienced from a virus, known as Covid-19 that is highly transmittable and is now spread worldwide. Many mathematical models and studies have been implemented to work on the infection and transmission risks. Besides the virus's transmission effect, another discussion appears in the community: the fear effect. People who have never heard about coronavirus, face every day uncertain and different information regarding the effect of the virus and the daily death rates from sources like the media, the medical institutions or organizations. Thus, the fear of the virus in the community can possibly reach the point that people become scared and confused about information polluted from different networks with long-term trend discussions. In this work, we use the Routh-Hurwitz Criteria to analyze the local stability of two essential critical points: the disease-free and the co-existing critical point. Using the discretization process, our analysis have shown that one should distinguish between the spread of "awareness" or "fear" in the community through the media and others to control the virus's transmission. Finally, we conclude our theoretical findings with numerical simulations.