

A SIMPLE DISCRETE FRACTIONAL EPIDEMIOLOGICAL MODEL APPLIED IN PREDICTING COVID 19 BEHAVIOR

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Since fractional order operators can explain memory effects and non-local features [2],[3],[4], recent efforts have been made to study mathematical models of epidemics based on fractional operators [1].

The purpose of this paper is to make a further contribution to the topic of mathematical modeling of epidemics by proposing a new model described by non-integer order difference equations.

The work shows that the designed system has at most two fixed points, the disease-free fixed point and the endemic fixed point.

A stability analysis was performed on the equilibria, which made it possible to indicate the conditions under which the pandemic disappears. Since this result proves by a theorem, it represents a remarkable result of the proposed method and can help policy makers better understand the epidemiological behavior of diseases over time.

Finally, the proposed model was applied in studying the behavior of Covid-19 in Brazil with real data to highlight the capability of the conceived approach [5].

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