Qualitative analysis of an SAIRD epidemiological model with negative feedback

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Epidemics, due to their dynamic nature, have their basic mathematical modeling which becomes more complex depending on how more factors that characterize each disease are considered. This work aims to study the dynamical behavior of a SAIRD epidemiological model by introducing negative feedback. Controlling the information about non pharmaceutical interventions is considered by the addition of a new variable which measures how the behavioral changes about isolation influence of pandemics.A Hopf bifurcation is analytically verified for the delay parameter. The qualitative analysis shows that feedback information index promotes more changes to the propagation of the disease than other parameters.