A Feedback SIRD Model for the Spread of Infectious Disease with Application to COVID-19 Pandemic

Daniel March, Jeston Bond and Gentian Buzi

***Abstract*— The COVID-19 global pandemic has highlighted the importance of identifying effective ways to control the spread of an infectious disease in a population. A solid understanding of the dynamics and the underlying mechanisms that govern this spread is an important step toward such a goal. Susceptible-Infected-Recovered (SIR) models and their variants have played an important role in providing such insight. However, these models have limited explanatory and predictive power due to policy and behavior changes over time. Here we present a modified version of the standard SIR models by introducing feedback in the disease transmission rate. We apply this model to publicly available COVID-19 US and international infection data. We show this model is more robust to parameter variations due to public health interventions and has much better explanatory and predictive power**

I. INTRODUCTION

p Intro here.

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TABLE I
AN EXAMPLE OF A TABLE

One	Two
Three	Four

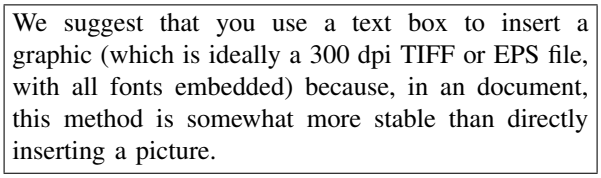

Fig. 1. Inductance of oscillation winding on amorphous magnetic core versus DC bias magnetic field

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V. CONCLUSIONS

A conclusion section is not required. Although a conclusion may review the main points of the paper, do not replicate the abstract as the conclusion. A conclusion might elaborate on the importance of the work or suggest applications and extensions.

APPENDIX

Appendixes should appear before the acknowledgment.

ACKNOWLEDGMENT

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References are important to the reader; therefore, each citation must be complete and correct. If at all possible, references should be commonly available publications.

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