1163-37-1009 **Salisu M Garba*** (salisu.garba@up.ac.za), Department of Mathematics, University of Pretoria, Pretoria, Gauteng 0002, **Jean M-S Lubuma** (jean.lubuma@up.ac.za), Department of Mathematics, University of Pretoria, Pretoria, Gauteng 0002, and **Berge Tsanou** (berge.tsanou@up.ac.za), Department of Mathematics, University of Pretoria, Pretoria, 0002.
Nonstandard Finite Difference Models of the COVID-19 Pandemic.

Since the emergence late in 2019 of the COVID-19 pandemic, several deterministic models have been designed for its transmission dynamics and control. Due to many factors that are still unknown on SARS-CoV-2, existing models exhibit interesting features (e.g. direct and indirect) about the manner in which the disease is spread. Moreover, the incorporation into the models of non-pharmaceutical interventions (NPIs) to curtail the disease, brings additional features. In this work, we construct nonstandard finite difference (NSFD) schemes for some SEIR-type models for COVID-19 and show that they are dynamically consistent. In particular, we show that our NSFD schemes are discrete dynamical systems, which are elementary stable. That is: (a) their fixed-points coincide with the continuum of disease-free-equilibria (DFE) of the continuous models, and (b) the fixed-points replicate the asymptotic stability property of the continuum of DFE whenever the control reproduction number is less than unity. Moreover, we show that the NSFD schemes preserve the effectiveness of NPIs (e.g. self-isolation, social-distancing, lockdown, wearing a facemask, disinfecting objects / surfaces, etc.) to combat the COVID-19 pandemic, as demonstrated for continuous models. (Received September 14, 2020)