1163-65-485 **Roumen Anguelov*** (roumen.anguelov@up.ac.za), Department of Mathematics and Applied, Mathematics, University of Pretoria, Pretoria, Gauteng 0028, South Africa. *Constructing topologically dynamically consistent numerical methods for continuous dynamical systes.*

The interest in numerical methods adequitely representing the properties of the model they approximate, comes from different directions: conservation of Hamiltonian, preservation of volume, reversibility of the flow, mimetic discretisation, dynamic consistency. Preserving qualitative properties is a specific goal of the nonstandard finite difference method. There is substantial intersection between these approaches. For example, often discretization aimed preservining particular property, e.g. conservation law, yields a method utilizing the tools defining the nonstandard finite difference method, i.e. nonlocal approximation and renormalization denominator. In this talk, we discuss the concept of topological dynamic consistency of a discrete dynamical system (a numerical method) and a continuous dynamical system (system of ODEs) using topological conjugacy. Since the properties of interest in a dynamical system are typically of topological nature, this concept indeed captures well the expectations from qualitative point of view that a numerical method should satisfy. We discuss appropriate tools and techniques for practical application of this definition to characterise existing numerical methods and to construct numerical schemes which are topologically dynamically consistent. (Received September 08, 2020)