1125-39-485 **Ronald E. Mickens*** (rmickens@cau.edu), Department of Physics, Clark Atlanta Univerty, Atlanta, GA 30314. *What is a NSFD Scheme?*

The main purpose of this presentation is to provide an answer to the question asked in the title. After giving the genesis of the NSFD methodology [1], we define the two features critical to the construction of NSFD schemes for differential equations: (i) a new formulation of the discrete first-derivative which introduces the concept of denominator functions [2]; and (ii) the nonlocal discrete representation of functions of the dependent variables. The implementation of the NSFD methodology has its basis in the concept of dynamic consistency [3], i.e., the exact incorporation of particular properties of the differential equations into the finite difference models of these equations. Finally, we consider several explicit examples of how to construct NSFD schemes and discuss a number of currently unresolved issues.

References

[1] R.E. Mickens, NSFD Models of Differential Equations (World Scientific, London, 1994). [2] R.E. Mickens, "Calculation of denominator functions", Numer. Methods PDE, Vol. 23 (2007), 672-691. [3] R.E. Mickens, "Dynamic consistency", J. Difference Eqs. Appl., Vol. 11 (2005), 645-653. (Received September 03, 2016)