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Elias M. Adamu and **Kailash C. Patidar*** (kpatidar@uwc.ac.za), Department of Mathematics and Applied Mathema, University of the Western Cape, Private Bag X17, Bellville, 7535, South Africa, and **Andriamihaja Ramanantoanina**. *A robust nonstandard finite difference scheme to solve a mathematical model for Visceral Leishmaniasis.*

Leishmaniasis is a vector-borne disease, caused by a protozoan parasite which is transmitted to humans by the bite of infected female phlebotomine sandflies. There are four main types of this disease: Visceral Leishmaniasis (also known as Kala-Azar); Post-Kala-Azar Dermal Leishmaniasis; Cutaneous Leishmaniasis; and Mucocutaneous Leishmaniasis. In this work, our focus is on a mathematical model of Visceral Leishmaniasis. The model incorporates three populations: the human, the reservoir and the vector host populations. The resulting model is a system of highly nonlinear differential equations. We carefully analyze this model to understand essential qualitative dynamics of the solution. We then design a robust NSFD scheme. A rigorous theoretical analysis of this scheme and comparative numerical results will be presented at the conference. (Received September 15, 2020)