UNIVERSITY OF RWANDA

COLLEGE OF SCIENCE AND TECHNOLOGY

SCHOOL OF SCIENCE

MATHEMATICS DEPARTMENT SEMINAR

TITLE: DISCRETE DYNAMICS OF DYNAMIC NEURAL FIELDS

SPEAKER: PROF. EDDY KWESSI

ABSTRACT: Dynamics of Neural Fields are tools used in neurosciences to understand the activities generated by large ensembles of neurons. They are also used in network analysis and neuroinformatics in particular to model a continuum of neural networks. They are mathematical models that describe the average behavior of these congregations of neurons, which are often in large amounts, even in small cortexes of the brain. Therefore, changes of average activity (potential, connectivity, firing rate, etc) are described using systems of partial different equations. In their continuous or discrete forms, these systems have a rich array of properties, among which the existence of nontrivial stationary solutions. In this talk, I will propose a discrete model for Dynamic Neural Fields based on nearly exact discretization schemes techniques. I will discuss the mathematical stability analysis of this model based on various types of kernels and corresponding parameters. Connection to graph theory will be shown. Simulations will be given for illustration.

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Zoom Link:
https://zoom.us/j/95102360297?pwd=dnBWU1YybjdkMmZ3SnZYc09waGU1UT09

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