

Dynamic Analysis on a Epidemic Diseases Model Under Exogenous Factors

Speaker:

Dr. Roxana López-Cruz, Mathematics, Universidad Nacional Mayor de San Marcos, Perú

Abstract:

In this study, we develop and analyze an extended SEIR-type compartmental model that incorporates vaccination and treatment to describe the dynamics of acute respiratory infection transmission. The basic reproduction number R_0 is analytically derived, and its sensitivity to vaccination and treatment rates is examined to assess the impact of public health interventions on epidemic control. The results emphasize the critical role of parameter interactions in determining disease persistence and show that combining both interventions produces stronger epidemiological effects than either one alone. Machine learning techniques, specifically Support Vector Machines (SVMs), are employed to classify epidemiological outcomes and support parameter estimation.

References:

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