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**COMPUTER SEMINAR ASSIGNMENT**

**Title:** Dynamics of an SIRWS Model with Waning of Immunity and Varying Immune Boosting Period.

**Authors:** Richmond Opoku-Sarkodie, Ferenc A. Bartha, Mónika Polner, and Gergely Röst

The study focuses on extending the traditional SIRS (Susceptible-Infectious-Recovered-Susceptible) model to better understand infectious disease dynamics. This extension, known as the SIRWS model, incorporates a compartment for individuals with waning immunity (W). This allows the model to capture the dynamics where immunity can be boosted upon repeated exposure to the pathogen, thereby prolonging immunity without re-infection. Through numerical and analytical analysis, the authors conclude that:

- The period during which waning immunity can be boosted is crucial for understanding disease dynamics.

- Considering asymmetric partitioning of immunity in models helps to better predict and manage infectious diseases.

This research offers valuable insights and contributes significantly to the field of epidemiology and public health. Given the global impact of COVID-19, this research is especially relevant as it enhances our understanding of disease dynamics. The findings can be applied to a range of infectious diseases where immunity wanes over time, such as COVID-19, improving strategies for disease control and prevention.