Title: When is Closing a School Effective for Stopping a Disease Spread?

Abstract: Occasionally, an elementary or high school may be faced with an outbreak of a disease such as influenza, MRSA, or measles. Because of the potential to spread these diseases quickly among healthy students and staff members, the school may consider closing for a period of time to limit the spread of the infection.

While this may be an effective strategy to help stop the spread of the disease, this comes at a cost, both in time (parents having to take time off work to watch their kids, lost class time) and money (lost wages for school staff, extra money for daycare, disinfection measures for the school). Thus, it is not a strategy to be taken lightly. However, waiting too long may render the strategy ineffective for stopping the spread of the disease.

In this talk, we will build a mathematical model for the spread of a disease through a school population and incorporate the effects of school closure into that model to try and answer the question: Under what circumstances should a school consider a closing as an effective strategy, and when should it be done for the maximum effect with minimal burden on parents, students, and staff?