1033-92-172   **Bingtuan Li*** (`bing.li@louisville.edu`), Department of Mathematics, University of Louisville, Louisville, KY 40292, and **Carlos Castillo-Chavez**, Department of Mathematics and Statistics, Arizona State University, Tempe, AZ 85287. *Spatial Spread of Sexually-Transmitted Diseases Susceptible Populations at Demographic Steady State.*

The non-spatial spread of strains of sexually-transmitted pathogens has been studied in heterosexually-active populations at a demographic steady state. Our objective is to study the impact of spatial movement on the spread of SIS sexually transmitted disease in two-sex heterosexually active populations facing competing pathogens.

In order to gain some understanding of the role of spatial movement of individuals, we introduce a reaction-diffusion model that accounts for the impact of local individuals' mobility on single-strain STD dynamics. We show that the spread of the disease is determined by the speed of propagation that is computed from the system obtained from the linearization about the leading edge of the epidemic invasion. We also show that the spreading speed can be characterized as the smallest speed of traveling wave solutions. Finally, we introduce a model that puts two distinct strains of the same pathogen in competition, and study the spatial transition dynamics between two endemic euqilibria that are supported by the non-spatial corresponding model. (Joint work with Carlos Castillo-Chavez). (Received September 10, 2007)