University of Manitoba

Pacific Institute for the Mathematical Sciences

PIMS-UManitoba Distinguished Lecture

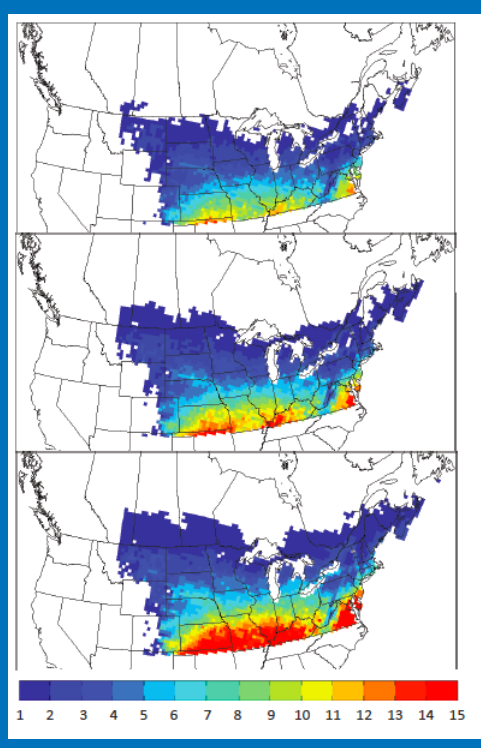
Jianhong Wu (York University)

14 January, 2016
2:30 pm

Robert B. Schultz Lecture Theatre
University of Manitoba

MATHEMATICS FOR RISK PREDICTION OF EPIDEMIC WAVES IN A CHANGING ENVIRONMENT

The extent to which climate change may affect human health by facilitating biological invasion and vector-host interaction to increase vector-borne diseases has been under considerable debate, resolution of which imposes significant challenge for mathematical research into qualitative metrics and standards. We develop mathematical models with temporal and spatial variations, and analyze these models to provide quantified potential effects of future climate change on the propagation speed and spatiotemporal patterns of vector-borne disease spread. We demonstrate the theoretical research with applications to avian influenza and Lyme disease spread, and we also show how biologically motivated models and analysis provide insights to resolution of open mathematical problems of critical solvability of second order differential operators in unbounded domains.



JIANHONG WU is University Distinguished Research Professor and Senior Canada Research Chair in Industrial and Applied Mathematics at York University, Canada. He is the Founding Director of the Centre for Disease Modelling, and is currently the Director of the York Institute for Health Research. His research interest and expertise includes nonlinear dynamical systems, spatial ecology, infectious disease epidemiology, neural networks and complex data clustering.

Dr. Wu has received a number of awards and recognitions, including the Queen's Diamond Jubilee medal from the Government of Canada, the Canadian Applied and Industrial Mathematics Research Prize, the Cheung Kong Visiting Professorship, the Paul Erdos Visiting Professorship, and the Alexander von Humboldt Fellowship.