Department of Mathematics

Applied Mathematics Seminar

Tony Wong

UCLA

First passage time problems in the spatial searching and binding process of lymphocytes with antigen-presentation cells

Abstract: Quick antigen detection is essential for our adaptive immune system to function properly. We model the T-cell migration and their search for antigens from binding with antigen-presentation cells (APC) in a lymph node. A successful search must encounter the cognate antigens from many APCs within a stochastic time span (before departure from the lymph node). As such, we study the first passage time statistic of binding and exiting events of T-cells in various settings, for example, multi-stage binding and spatially heterogeneous distribution of APC.

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2:15 – 3:15 PM

LO 1328

Faculty Host: Maria R. D'Orsogna