



**MMI**

Maud Menten Institute  
Mathematics for the Life Sciences



**University  
of Manitoba**



***Maud Menten Institute /  
Mathematical and Statistical Biology Seminar***

**Monday, February 3, 2025  
2:00pm CT (12pm PST) Over Zoom**

[Join Zoom meeting](#)

Meeting ID: 699 6049 3994

Passcode: 900153

-or-

Join for UofM watch party - 225 St. Paul's College

**Chris Soteros**

**Mathematics & Statistics  
University of Saskatchewan**

**Mathematical Modelling of DNA Topology**

The field of DNA Topology includes the study of DNA geometry (supercoiling) and topology (knots and links) and their effects on DNA in vitro and in vivo. Statistical mechanics-based polygonal models of DNA have proved useful for addressing many questions arising from DNA topology experiments. Of these, lattice polygon models have played a fundamental mathematical/computational role in addressing the open questions.

In this talk, I will start by giving an overview of DNA topology experiments and open questions, along with examples of polygonal models used to study DNA topology.

This will be followed by a review of recent advances we have made using lattice polygon models to address questions related to the knot and link statistics of DNA in vitro either subject to varying salt conditions or under nanochannel-like confinement.

