

The **Department of Mathematical Sciences** presents a colloquium with

Professor David Swigon

University of Pittsburgh

Thursday, September 27, 2012

4:30 – 6 pm

Room 119 WCharlton

Biological Implications of DNA Topology and Elasticity

The topological properties of closed DNA molecules play surprisingly important role in biology - the ability of cells to control DNA topology is essential for their survival. Advances in the theory of DNA elasticity enhanced our understanding of this role and other phenomena associated with biological function and storage of DNA. Classical elastic rod models have been applied to DNA supercoiling and packing inside of cells, while base-pair level models of DNA made it possible to incorporate the effects of nucleotide sequence and the negative charge of DNA in new mesoscale models of complex DNA-protein assemblies, which yielded insights into the role of DNA deformability in gene regulation. This talk will give an overview of recent research of the speaker on the above topics, in particular, methods for solving equilibrium equations of the elastic rod model for DNA and determining the stability of equilibrium configurations, the application of sequence dependent DNA elasticity in modeling of DNA-protein complexes.

Refreshments will be served at 3:45 pm
in the Faculty & Graduate Student Lounge
Room 4118 French Hall