



UNC  
**GREENSBORO**

Department of  
Mathematics & Statistics

Helen Barton Lecture Series  
in Mathematical Sciences  
Fall 2018

**Dr. Alexander Dranishnikov**

Distinguished Professor of Mathematics  
University of Florida



Alexander Dranishnikov is a Distinguished Professor of Mathematics at the University of Florida. He received his PhD from Lomonosov Moscow State University and his DSc from Steklov Mathematical Institute in Moscow. He has held positions at Cornell, the University of Miami, and Penn State as well as many visiting positions in Germany, Switzerland, and France.

In the 1980s, Dranishnikov constructed the first example of a compact metric space with infinite covering dimension and finite cohomological dimension, thus settling a 50-year old problem of P.S. Alexandroff. This work also led to solutions of other problems concerning the cohomological dimension theory of compact spaces.

His work in dimension theory has brought him international acclaim and he has received many prestigious awards including the Prize of the Moscow Mathematical Society, the Prize of the Academy of Science of the USSR, and the Bing Award. He became a fellow of the American Mathematical Society in 2012. He is the author of over 140 refereed publications, and has served on the editorial board of prestigious journals including the Proceedings of the AMS, Algebraic and Geometric Topology, Topology and its Applications, the Journal of Topology and Analysis, and Fundamenta Mathematicae.

His research interests include Geometric Topology, Geometric Group Theory, Asymptotic Topology, and Dimension Theory.

**Topology and Robot  
Motion Planning**

In this series of talks we present some ideas behind the subject of Topology.

In particular we will discuss some important numerical invariants of topological spaces such as the dimension and the category. Then we will concentrate on a relatively new numerical invariant in Topology called topological complexity (TC). This invariant was introduced by M. Farber to study stability of algorithms for robot motion. It turns out that the TC is an interesting invariant to study from the point of view of Topology.

We will show that for motion planning algorithms of robotic arm one needs to extend Farber's concept of TC from topological spaces to mapping between spaces.

**Lecture 1**

Wednesday, October 10, 2018

Reception: Lounge, Petty 116, 3:30–4:00 PM

Lecture: Petty 136, 4:00 PM

**Lecture 2**

Thursday, October 11, 2018

Reception: Lounge, Petty 116, 3:30–4:00 PM

Lecture: Petty 136, 4:00 PM

**Lecture 3**

Friday, October 12, 2018

Reception: Lounge, Petty 116, 3:30–4:00 PM

Lecture: Petty 136, 4:00 PM