MAA Short Course on Knots In Science

at the New Orleans Joint Mathematics Meeting

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ORGANIZER: **De Witt Sumners, Florida State University**

DESCRIPTION: Knot theory has recently evolved from an area in "pure" mathematics to include scientific applications in biology, chemistry, fluid mechanics and physics. This development is not surprising when one realizes that knots are 1-dimensional strings that explore the entanglement complexity possible in 3-dimensional space. Many physical objects are string-like; macromolecules such as polyethylene and DNA exhibit knotting, and the DNA knots are diagnostic of cellular metabolic function. Vortices that form in fluid motion can be long string-like objects, and vortex entanglement has physical ramifications. This short course will introduce knots, and present introductions to many fascinating scientific applications for knots.

TITLES & SPEAKERS:

INTRODUCTION TO KNOTS
Colin C. Adams, Department of Mathematics, Williams College

KNOTS IN PHYSICS
Louis H. Kauffman, Department of Mathematics, Statistics and Computer Science, University of Illinois at Chicago

VORTEX AND MAGNETIC KNOTS IN FLUID SYSTEMS
Renzo L. Ricca, Department of Mathematics, University College, London

PHYSICAL KNOTS
Jonathan Simon, Department of Mathematics, University of Iowa

IDEAL KNOTS
Andrzej Stasiak, Laboratory of Ultrastructural Analysis, University of Lausanne

KNOTS IN DNA
De Witt L. Sumners, Department of Mathematics, Florida State University

KNOTS IN POLYMERS
Stuart G. Whittington, Department of Chemistry, University of Toronto