

Emergent Research:

The PIMS Postdoctoral Fellow Seminar

Jan 12, 2022 | 9:30am Pacific

Knotted Objects Confined to Tubes in the Simple Cubic Lattice

ABSTRACT:

Motivated by biological questions related to DNA packing and the movement of molecules through channels, it is of interest to determine whether a specific knot or link type can be realized in a confined volume. In this talk, we will discuss the size of the smallest lattice tube that can contain certain families of knotted objects. We will take advantage of a theorem of Arsuaga et al., which allows us to study entanglements in lattice tubes by analyzing how level spheres coming from the standard height function intersect the knotted object. We conclude by discussing the exponential growth rate of links in the smallest lattice tube which admits nontrivial knotting and linking. This talk is based on joint work with Jeremy Eng, Robert Scharein, and Chris Soteros.

For more information and registration:

<https://www.pims.math.ca/seminars/PIMSPDF>



Puttipong Pongtanapaisan

PIMS PDF, USaskatchewan

SPEAKER BIO:

Puttipong Pongtanapaisan obtained his Ph.D. at the University of Iowa, where he studied knot theory and low dimensional topology under the supervision of Dr. Maggy Tomova. He is currently a PIMS Postdoctoral Fellow at the University of Saskatchewan. He is working with Dr. Chris Soteros to explore knotted objects in lattice tubes by analyzing the arrangement of local maxima and minima of knots and links.

ABOUT PIMS PDF SEMINARS:

PIMS ongoing lecture series featuring our Postdoctoral Fellows every three weeks. You will have the opportunity to connect with emerging research in the mathematical sciences from a PIMS Postdoctoral Fellow. PIMS PDFs are amongst the top young researchers in Canada, and this is an excellent opportunity to learn about them, and their work.