

The FAU-SIAM student chapter invites you to a talk by

Emma Thomas and Andrew Tirado

FAU students in joint work with Dr. Daniela Nikolova



Symmetry and Quasi-symmetry in Viral Capsid Structures

Friday November 13, 2020

4:00pm EST

Open to all and live on [Zoom](#) with the passcode Fall2020

Abstract

Symmetric and quasi-symmetric structures are beautiful and powerful mathematical tools that are prevalent in the arts, crystallography, and molecular physics. Through our previous research project, “The Mathematics and Art Connection,” we have witnessed the usefulness of group theory as it relates to symmetry through our investigation of the 2D 17-Wallpaper Groups and the 3D 230-Crystallographic Space Groups. While many natural symmetric structures experience characteristic periodicity, there is also a great deal of quasi-symmetric structures in our Universe that are left to further investigation. In particular, in the field of virology some viral capsid shells, the protein shell that encapsulates a virus, follow a quasi-crystalline arrangement in which Penrose tilings in 3-dimensions help to shed light on virus structure. Through this project, we examine the usage of these areas of mathematics in describing and analyzing viral capsid structures. We aim to further explore quasi-symmetric structures in order to better model viruses and hopefully aid in development of better drugs and treatments.

About the speakers

Emma Thomas is currently an undergraduate student at FAU and studies Mathematics. Andrew Tirado is currently an undergraduate student at FAU and studies Computer Sciences. Their research is not focused on COVID-19 only. They started investigating the viruses’ structure in December 2019 under the supervision of Dr. Daniela Nikolova. It is a joint effort among undergraduate students from Mathematics, computer science, and Bio-Chemistry.

Please contact us for more information about our student chapter!

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