



The Math/Stats Colloquium  
Department of Mathematics and Statistics  
San José State University



# Abdulmelik Mohammed

SJSU

*Algorithmic Design of  
Nanoscale DNA Polyhedra*

WED MAR 27, 2024, MH320

**Abstract:** DNA origami is a versatile experimental protocol for the self-assembly of nanoscale structures from a scaffolding long viral strand and synthetic short “stapling” strands. In this talk, I will present graph-theoretic models for the algorithmic design of DNA origami polyhedral wireframes, where the mathematical challenge is the efficient and unknotted routing of the circular scaffold strand along the edges of the polyhedra. I will present our theoretical and experimental results of our Eulerian circuit approach for the simple case of spherical polyhedra and the more complicated case of toroidal polyhedra.

*Background:* Discrete math (Math 42).

**About the speaker:** Abdulmelik Mohammed is an Asst. Prof. in the Dept. of Biomedical Eng. whose research focuses on the computational modeling and analysis of natural and synthetic biomolecular systems. He obtained his D.Sc. from Aalto Univ. (Finland) where his work on the algorithmic design of biomolecular nanostructures won the School of Science dissertation award. Before joining SJSU, he was a postdoc in the Dept. of Mathematics and Statistics at U. South Florida.

SNACKS IN MACQUARRIE HALL 331B AT 2:40PM

TALK STARTS AT 3:00PM

For more information, see our full schedule at:

<http://www.timhsu.net/colloq/>