9-10-2020

Mathematical Sciences Newsletter

Georgia Southern University

Mathematical Sciences

September 10, 2020 Newsletter

Mathematical Sciences Majors Welcome Event Follow Up

Dear Mathematics Majors,

Thank you to all the faculty and students who were able to make last Friday's Welcome event. If you missed it, the slides are posted here: Welcome Event Slides

We are gathering information about what types of Math Club Activities and Student/Faculty Friday Gatherings would be the most interesting or useful for you. If you'd like to have a say in that, please fill out this Google Interest Survey for Majors.

Thank you and have a great Friday!

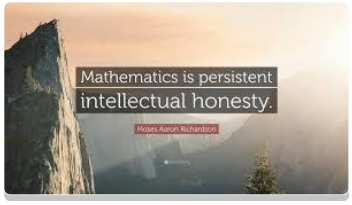
Dr. Sabrina Hessinger

IN THIS ISSUE

Math Quote of the Week

"Mathematics is persistent intellectual honesty." Moses Richardson (*Mathematics and intellectual*

honesty, American Math. Monthly 59 (1952)



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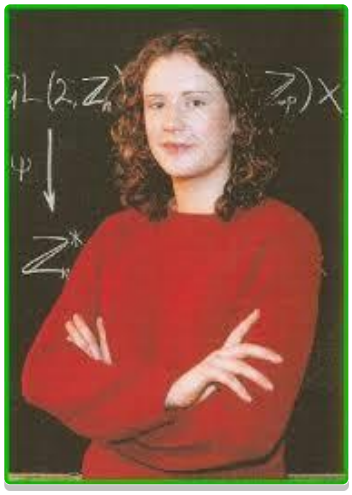
Problem of the Week

Is there a permutation of the positive integers with the property that every pair of consecutive elements adds up to a perfect square? (Source Amer. Math. Monthly 12188)

Eagle Problem Solvers Meet
Friday, September 11·12:15 – 1:15 pm
Every 2 weeks on Friday, until Dec 12, 2020
Zoom Link: https://georgiasouthern.zoom.us/j/8274989909

Mathematician of the week



Sarah Flannery

Sarah was born in 1982 in Blarney, County Cork. She rocketed to fame at the age of sixteen by winning the Young Scientist of the Year Award in 1999. Her project, entitled *"Cryptography – A New Algorithm versus the RSA"*, was all the more remarkable for baffling the judges who were hard-pressed to match her technical acumen. Her research developed a computer algorithm - named the Cayley-Purser Algorithm, after Arthur Cayley, an eminent 19th century Cambridge mathematician, and Michael Purser, a cryptographer and founder of Baltimore Technology who inspired her - which allows encrypted data to be transmitted at high speed.
She has delivered a number of lectures around the world, and co-authored a book entitled *"In Code, A Mathematical Journey"* (2000) with her father, David Flannery. She worked on the highly-regarded *Mathematica* package for Wolfram Research, continued as a software engineer for Electronic Arts, and co-founded Tirnua Inc. (a very entertaining virtual world; *Tír Nua* = *New Country*) where she is currently engaged as a senior computer scientist. This excerpt is from http://homepage.eircom.net/~oflannery/bio/bioSF1982L.htm where you can read more!

[her portrait is illustrated above, courtesy of *"In Code, A Mathematical Journey"*, Profile Books Ltd., 2000]

Career Spotlight: Mathematical Biophysicist

Mathematical biophysics is a subfield of both biophysics and mathematical biology focusing of physical and physico-chemical mechanisms involved in physiological functions of living organisms, as well as the molecular structures supporting such physiological functions. Mathematical biophysicists develop theories and methods of the physical sciences for the investigation of biological systems. Mathematical biophysicists use math as they apply models and experimental techniques to larger systems such as tissues, organs, populations, and ecosystems. Scientists in this field conduct research concerned with understanding the interactions between the various systems of a cell, including the interactions between DNA, RNA and protein biosynthesis. This and more information can be found at the following sites:
https://en.wikiversity.org/wiki/Mathematical_biophysics
http://weusemath.org/

Math in the News: Using Math to examine the sex differences in dinosaurs

When you only have fossils to go off of, it's hard to tell which dinosaurs traits, like size & ornamentation, are related to the animals' sex and which traits are related to other things like age. Male lions typically have manes. Male peacocks have six-foot-long tail feathers. Female eagles and hawks can be about 30% bigger than males. But if you only had these animals' fossils to go off of, it would be hard to confidently say that those differences were because of the animals' sex. This is the problem that Paleontologists face: it's hard to tell if dinosaurs with different features were separate species, different ages, males and females of the same species or just varied in a way that had nothing to do with sex. A lot of the work trying to show differences between male and female dinosaurs has come back inconclusive. But in a new paper, scientists show how using a different kind of statistical analysis can often estimate the degree of sexual variation in a data set of fossils. This and more can be found at
https://www.sciencedaily.com/releases/2020/08/200826200704.htm

Our Speakers

Noah Hallman

Divine Wanduku

Colloquium Speakers: Noah Hallman (Grad student) and Divine Wanduku

MODELING THE STOCHASTIC DYNAMICS OF THE COVID-19 PANDEMIC, PART I

2:30 pm via Zoom

https://georgiasouthern.zoom.us/j/96517002361

(Meeting ID: 965 1700 2361)

Abstract:

As of today, the WHO reports that there are 27236916 cases, 891031 deaths and 216 countries, areas and territories affected by the COVID-19 pandemic. In addition, many economies (including the USA) have suffered from the negative impacts of this pandemic. Moreover, this disease is very new; it is caused by the novel Coronavirus (COVID-19); research about the disease is in the infancy stage. In this talk, we present our preliminary phase of modeling and studying the stochastic dynamics of COVID-19. We present two COVID-19 epidemic models. The epidemic models are discrete time Markov Chain models with multinomial transition probabilities. Starting with a closed community experiencing an outbreak of COVID-19, we want to study the effects of people who are asymptomatic and infectious, symptomatic and infectious, exposed and mildly infectious, symptomatic hospitalized and infectious, as well as individuals who have recovered with partial immunity, in the disease dynamics. While this research is ongoing, and more results will be presented in the sequel to this talk (Part II), in a few months ahead, we would highlight in this talk the importance of applying statistical and stochastic models to understand and control COVID-19.

Follow Patricia Rempe

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