

SCHEDULE WEEK 2

All times are CST

JUNE 28 – JULY 2

<http://math.uchicago.edu/may/REU2021/SECOND.pdf>

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Talks take place Monday through Friday afternoons (and/or mornings, at the discretion of speakers and hosts) Talks and group meetings are open to all participants or aimed at focus groups; for focus group events, those interested in joining and are not on the list of people in the relevant group should email the host in advance. All talks are 45 minutes to an hour, with at least a half hour break between talks. Open program talks are live on Zoom; with the speaker's permission, talks will be recorded and made available on Zoom.

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MWF 1:00: André Neves

Lecture 1: Gaussian curvature

I will explain the definition of Gaussian curvature and talk about the notion of invariance under isometries.

Lecture 2: Gauss-Bonnet Theorem

I will explain Theorema Egregium of Gauss and Gauss Bonnet.

Lecture 3: Surface energies

I will talk about several applications of Lecture 1 and 2 to problems in geometry.

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MTWThF 2:30: The probability subprogram, Greg Lawler

MWF 2:30: Greg Lawler

Title: Harmonic functions, Brownian motion, and analysis in the plane

Abstract: See <http://math.uchicago.edu/may/REU2021/ABSTRACTSWeek1.pdf>

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Tuesday 1:00, Thursday 12:00: Shmuel Weinberger

Title: Introduction to Quantitative Topology

Abstract: The great liberating emotion of topology is its looseness, it's freedom to allow deformations, its handling of imprecise data. So why bring analysis back in? In this series of vignettes, I will try to explain connections between quantitative topology and differential geometry, nonsmooth analysis, topological data analysis, logic, geometric group theory and maybe other things.

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TTh 3:00: Maryanthe Malliaris

Title: Ultrafilters in mathematical logic

Abstract: See <http://math.uchicago.edu/may/REU2021/ABSTRACTSWeek1.pdf>

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Thursday 10:00: Benedict Morrissey

Title: Borel–Weil and Beyond

Abstract: The aim of this talk is to give an introduction to how the Borel–Weil Theorem describes representations of Lie groups via the actions of these groups on functions on the flag variety. The talks will focus on concrete examples.

TTh 4:30; MWF 4:00: Peter May (maybe a day or two of informal meetings)

Title: Coambiguous concepts

Abstract: See <http://math.uchicago.edu/~may/REU2021/ABSTRACTSWeek1.pdf>

Monday: Continuing: Spaces, simplicial sets, categories, and posets

T-F? An historical introduction to stable homotopy theory