

New York Number Theory Seminar

CUNY Graduate Center

Spring, 2026

INFORMATION

The New York Number Theory Seminar meets every Thursday on Zoom and at the CUNY Graduate Center. The lecture begins at 3:00 p.m. EST (New York time). The schmooze session (to which everyone is invited) begins at 2:30 p.m. The speaker often explains what the talk is about before the talk begins.

All lectures and schmooze sessions are live on Zoom. When the speaker is in New York, we meet at the CUNY Graduate Center (and also broadcast on Zoom) and we encourage attendance in person. Most talks are also recorded and uploaded to YouTube.

ZOOM LOGIN

<https://lehman-cuny-edu.zoom.us/j/84066184717?pwd=dkZFbVdyQm5KMUJtcUhFcjMxV0J2QT09>

Meeting ID: 840 6618 4717

Passcode: 304403

SCHEDULE OF TALKS

Date: Thursday, February 12, 2026

Speaker: Isaac Rajogopal, MIT

Email: isaacraj@mit.edu

Title: Possible sizes of sumsets

Abstract: Nathanson introduced the *range of cardinalities of h -fold sumsets*

$$\mathcal{R}(h, k) := \{|hA| : A \subseteq \mathbb{Z} \text{ and } |A| = k\}.$$

Following a remark of Erdős and Szemerédi that determined the form of $\mathcal{R}(h, k)$

when $h = 2$, Nathanson asked what the form of $\mathcal{R}(h, k)$ is for arbitrary $h, k \in \mathbb{N}$.

For $h \in \mathbb{N}$, we prove there is some constant $k_h \in \mathbb{N}$ such that if $k > k_h$, then $\mathcal{R}(h, k)$

is the entire interval $\left[hk - h + 1, \binom{h+k-1}{h} \right]$ except for a specified set of $\binom{h-1}{2}$ numbers.

Moreover, we show that one can take $k_3 = 2$.

Date: Thursday, February 19, 2026

Speaker: Melvyn B. Nathanson, Lehman College (CUNY)

Email: melvyn.nathanson@lehman.cuny.edu

Title: Diversity, equity, and inclusion for problems in additive number theory

Abstract: This talk will survey the diversity of problems in additive number theory, observe that equity requires the consideration of less currently popular problems, and argue for their inclusion in the additive canon. Of particular interest will be problems about the sizes of sumsets of finite sets of integers and problems about the intersection of sumsets.

Date: Thursday, February 26, 2026
Speaker: Bruce Reznick, University of Illinois at Urbana-Champaign
Email: reznick@illinois.edu
Title: Equal sums of two cubes of quadratic forms
Abstract: We give a complete description of all solutions to the equation $f_1^3 + f_2^3 = f_3^3 + f_4^3$ for quadratic forms $f_j \in \mathbb{C}[x, y]$ and show how, roughly two thirds of the time, it can be extended to three equal sums of pairs of cubes. We also count the number of ways a sextic $p \in \mathbb{C}[x, y]$ can be written as a sum of two cubes. The extreme example is $p(x, y) = xy(x^4 - y^4)$, which has six such representations. There are name-drops of Euler and Ramanujan.
This talk is based on the paper of the same name, which appeared in the *International Journal of Number Theory* **17** (2021), pp.761-786, MR4254775.

Date: Thursday, March 5, 2026
Speaker: Daniel Larsen, MIT
Email: dlarsen@mit.edu
Title: tba