

# Linear algebra in combinatorics seminar

July 5th - August 12th 2022

**Description.** This will be a student-led seminar about applications of linear algebra in other fields of mathematics. The focus will be on combinatorics and geometry. Students will present different topics and applications and discuss how the details of such applications. The goal is to see how linear algebra is applied in research in mathematics. The topics selected will get closer to open problems in mathematics as the seminar progresses. The organizer of the seminar is Pablo Soberón.

**Eligibility.** This seminar is open to CUNY students that have taken a course in linear algebra, and have been recommended by a faculty member. Having taken courses in other topics in mathematics (particularly combinatorics, linear algebra, or a proof-based analysis course) is desirable but not mandatory. Students from under-represented minorities in mathematics are particularly encouraged to apply.

**Funding.** Selected students who are eligible to receive funds (i.e., are US citizens or permanent residents) from NSF will get a stipend of \$1,500 for a successful participation in the summer. This will allow the students to dedicate time and effort to the seminar.

**Modality.** The seminar will run hybrid, meeting two times per week online and once in person. The students will present in groups of two or three a topic in each session. Prof. Soberón will assign the topics and the material to be presented. Students are expected to prepare their presentation in advance. Students are also expected to read in advance the topics that other students will prepare. Prof. Soberón will hold office hours to solve any questions about the presentations.

**Final project:** Students will choose their favorite topic and collaboratively make a poster to be displayed at Baruch College's mathematics department.

**Material.** The topics will be based on Jiří Matoušek's book *Thirty-three miniatures*. This book will be provided to the participating students. Additional topics may come from Frankl and Babai's book *Linear algebra methods in combinatorics* or from research papers.

**How to apply.** Upload your CV to <https://www.dropbox.com/request/F5MF4eOUAvAitSGBZZZH>  
Your CV must include: Math courses you've taken, the name and email of the faculty member recommending you (they do not need to write a letter), your expected graduation date, your CUNY ID number, any other information you think is relevant. For funding purposes, please indicate whether you are a permanent resident or citizen of the US.

Upload your CV by **May 12th** for full consideration.

**Questions and more information:** See more information at <https://www.psoberon.com/linear-algebra-seminar>, or email Pablo Soberón at [pablo.soberon-bravo@baruch.cuny.edu](mailto:pablo.soberon-bravo@baruch.cuny.edu).