



Du  
**18**  
JUIN.  
2022

14h30  
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15h30

## **SÉMINAIRE BOURBAKI**

**Sarah Peluse — Recent progress on bounds for sets with no three terms in arithmetic progression**

IHP  
Hermite

INSCRIPTION

A famous conjecture of Erdős states that if  $S$  is a subset of the positive integers and the sum of the reciprocals of elements of  $S$  diverges, then  $S$  contains arbitrarily long arithmetic progressions. If one could prove, for each positive integer  $k$ , sufficiently good bounds for the size of the largest subset of the first  $N$  integers lacking  $k$ -term arithmetic progressions, then Erdős's conjecture would follow. There is thus great interest in the problem of proving the strongest possible bounds for sets lacking arithmetic progressions of a fixed length. In this talk, I will survey the recent advances of Bloom–Sisask on this problem for length three progressions and of Croot–Lev–Pach and Ellenberg–Gijswijt on the analogous problem in  $F^n_3$  (the "cap set problem"). These two advances rely on very different techniques —Fourier analytic methods and a version of the polynomial method, respectively— and I will give an overview of both.

URL de la page : [https://www.ihp.fr/fr/agenda/sarah-peluse-recent-progress-bounds-sets-no-three-terms-arithmetic-progression&is\\_pdf=true](https://www.ihp.fr/fr/agenda/sarah-peluse-recent-progress-bounds-sets-no-three-terms-arithmetic-progression&is_pdf=true)



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### **HORAIRES**

L'institut :

- lundi au vendredi de 8h30 à 18h,
- fermé les jours fériés.

Le musée - Maison Poincaré :

- lundi, mardi, jeudi et vendredi de 9h30 à 17h30,
- samedi de 10h à 18h,
- fermé le mercredi et le dimanche.