



The Math/Stats Colloquium  
Department of Mathematics and Statistics  
San José State University



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UC Davis

*Tverberg's theorem is 50 years old  
(and with a great future!)*

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**Abstract:** Tverberg's theorem is a classic of combinatorial geometry about what happens if we color a set of  $n$  points with  $m$  colors. It states: Let  $a_1, \dots, a_n$  be  $n$  points in  $\mathbf{R}^d$ . If  $n > (d + 1)(m - 1)$ , then the  $n$  points can be partitioned into  $m$  sets  $A_1, \dots, A_m$  whose  $m$  convex hulls  $\text{Conv}(A_1), \dots, \text{Conv}(A_m)$  have at least one point in common.

Over the years many generalizations and extensions, including colorful, fractional, and topological versions, have been developed and are a bounty for discrete geometers. We introduce a fascinating new way to interpret these theorems, now with a view toward applied mathematics and applications to clustering algorithms for machine learning.

*Background:* At least one proof-based class (e.g., Math 108).

**About the speaker:** Jesús A. De Loera is a Professor of Mathematics at UC Davis and a fellow of the AMS. His teaching awards include the 2017 MAA Golden Section Teaching Award. He has published over 90 papers and two books in a wide range of topics.

SNACKS IN MH331B AT 2:30 PM

TALK STARTS AT 3:00 PM

For more information, see our full schedule at:

<http://www.timhsu.net/colloq/>