# Many Cheerful Facts

Organizers: Michael Pejic & Damien Mondragon

Tuesday, 1:10-2:00 pm, 939 Evans

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Apr. 14 **Kevin Lin**, UC Berkeley

*What are infinity structures?*

$A_\infty$ structures (and their $E_\infty$ and $L_\infty$ cousins) are certain "homotopy-algebraic" structures that generalize the classical notions of associative algebras (and respectively commutative algebras and Lie algebras). They arise naturally in many areas of mathematics, including topology, algebraic geometry and deformation theory, and symplectic geometry.

In this talk, I will introduce $A_\infty$ algebras, which are algebras that are "associative up to homotopy". I will discuss some of the applications of the $A_\infty$ viewpoint to topology, in particular to rational homotopy theory. Through the example of $A_\infty$ algebras, I hope to illustrate some of the features and advantages of infinity structures in general.