
ALLEN KNUTSON, Cornell University
Schubert calculus and scattering diagrams

How many lines in space pass through four, given, generic lines?" (answer: two) is a counting problem admitting many generalizations, to chains of subspaces, isotropic or Lagrangian subspaces; or, beyond counting to answers living in exotic cohomology theories (K , equivariant, quantum). In all these cases we have alternating-sum formulae for the manifestly nonnegative answers, admitting much computer experimentation in the search for manifestly nonnegative formulae. I'll review the history, and talk about recent work (joint with Paul Zinn-Justin) that uses input from quantum integrable systems to give positive answers to more of these questions. Quiver varieties, cluster varieties, E_8 , and triality will all make appearances.