

**Meeting:** 1001, Evanston, Illinois, SS 1A, Special Session on Modern Schubert Calculus

1001-22-425      **David E Speyer\*** ([speyer@math.berkeley.edu](mailto:speyer@math.berkeley.edu)), University of California, Berkeley, 970 Evans Hall #3840, Berkeley, CA 94720-3840. *Horn's Problem, Honeycombs and Vinnikov Curves.*

Abstract: The multiplicative version of Horn's problem asks what the possible critical values of three matrices  $A$ ,  $B$  and  $C$  are, given  $ABC = 1$ . A Vinnikov curve is a projective plane curve which can be written as  $\det(xX + yY + zZ) = 0$  with  $X$ ,  $Y$  and  $Z$  positive definite Hermitian matrices; Vinnikov has solved the problem of classifying such curves. We will relate these two problems to each other and pose tropical versions of them. This allows us to reprove Knutson and Tao's criterion for the solvability of Horn's problem in terms of honeycombs and illuminate the origins of honeycombs. (Received September 01, 2004)