A variant of the Hales-Jewett theorem

Date: October, 9

Time: 4pm

Location: 750 Schapiro CEPSR

Abstract: The Hales-Jewett theorem is a central result in Ramsey Theory. It states that for every m and n natural numbers there is a threshold, $N = N(m, n)$, such that for any partition of $[0, 1, ..., n-1]^N$ into m classes there is a class containing a combinatorial line.

We present a variant of the Hales-Jewett theorem for $n = 3$. This variant gives a much better bound on N than the best known bound for Hales-Jewett and it is still strong enough for many applications. For example we show that for any coloring of the first L natural numbers using not more than $\log \log L$ colors, there is always a monochromatic geometric progression of length three.

Joint work with Ron Graham.