Small subsquares of Latin squares
Peter Cameron

I will talk about some work of Ian Wanless and his student Joshua Browning, and some further work that Ian and I did last month.

We are interested in the maximum number of subsquares of order $m$ which a Latin square of order $n$ can have, where we regard $m$ as being fixed and $n$ as varying and large. In many cases this maximum is (up to a constant) a power $n^r$, for some exponent $r$ depending on $m$. However, we cannot prove that this always holds; the smallest value of $m$ for which it is not known is $m = 7$.

A related problem concerns the maximum number of Latin squares isotopic to a fixed square of order $m$. 