**Title:** A conjecture of Alon and Tarsi and a lemma by David Glynn.

**Abstract:** Consider a Latin Square on symbols 1, 2, $\ldots, n$. Every row defines a permutation, so does every column. The sign of the square is the product of all row signs and all column signs. A conjecture of Alon and Tarsi from 1992 is that for even $n$ the numbers of even and odd latin squares are different. If we only consider Normalized Latin Squares, that is Latin Squares with constant diagonal, then the conjecture is that the number of even and odd squares is different for all $n$.

In 1998 David Glynn proved an identity involving the determinant of a matrix power modulo $p$. Twelve years later he realized that his identity can be used to prove that Alon-Tarsi's conjecture is true for $n = p - 1$, before that it was only known for $n = p$ (Drisko, 1998) and $n = p+1$ (Drisko, 1997). Here $p$ is an arbitrary prime.

In the talk we will explain how Glynn's identity can be used to prove the conjecture for all the known cases $n = p - 1, p, p + 1$. We also prove the conjecture for $n = p + 2$, for 'most $p$' (the only primes $< 150.000.000$ for which our proof does not work are $p = 234.781$ and $p = 115.480.283$).