NUMBER THEORY SEMINAR

The multiplicative orders of certain Gauss factorials (again)

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<u>WHERE:</u> Chase 227

<u>ABSTRACT:</u>

Departing from the well-known Wilson's Theorem of elementary number theory and a generalization due to Gauss, I will discuss more general "Gauss factorials". These are products of integers from 1 to $(n-1)/M$ (mod n) and relatively prime to n, where $n \equiv 1 \pmod{M}$. In particular, I will present improved results on the multiplicative orders (mod n) of these products, where n is a power of a prime and $M = 3, 4$ and 6. These improvements - in particular a more elegant and much faster test for 'exceptionality' - relate to our extensions of the classic binomial coefficient congruences of Gauss and Jacobi, and a more recent one due to Hudson and Kenneth Williams. (Joint work with Karl Dilcher.)

Any questions, please e-mail: rnoble@mathstat.dal.ca.