JACOBS UNIVERSITY

Mathematics Colloquium at Jacobs University Bremen

John Cremona

(University of Warwick, currently at Bristol)

will speak on

Unimodular Integer Circulants

Date: **Monday, November 26, 2007**
Time: **17:15**
Place: **Lecture Hall Research II, Jacobs University**

Abstract:
A "circulant" is a square matrix in which each row is obtained from the previous row by shifting its entries cyclically one step to the right: thus, for an n by n matrix the i, j entry only depends on the value of $i - j \pmod{n}$. We will discuss the question of when such a matrix with integer entries is "unimodular" (that is, has determinant either $+1$ or -1). This question arose from group theory, as it determines whether certain so-called "cyclically presented groups" are trivial. The solution involves classical algebra (polynomial resultants), elementary complex arithmetic and inequalities, and — for the hardest case — an application of p-adic analysis, which is a powerful tool in modern number theory.

Colloquium Tea at ca. 16:45 in the Tea Room of Research II, close to the lecture hall. Everybody is welcome!

M. Stoll