VCU Discrete Mathematics Seminar

Apagodu—Zeilberger Algorithms and Some Applications

Prof Moa Apagodu
VCU!

Wednesday, February 8
1:00-1:50
4119 Harris Hall (conference room)

Every "proper-Hypergeometric" multisum/integral identity with a fixed number of summation or integration signs, possesses a short, computer-constructed proof. We present the theory behind these algorithms and proof methods with some applications. In particular, we will discuss the following problems as a showcase.

Prove the identity

$$\sum_{k=0}^{n} \binom{n}{k}^3 = \sum_{k=0}^{n} \binom{n}{k}^2 \binom{2k}{n}.$$

Find the diagonal coefficients (i.e. coefficient of $x^n y^n z^n$), in the Taylor expansion of

$$\frac{1}{\sqrt{(1-x)^2+(1-y)^2+(1-z)^2-2}}.$$

Find the number of permutations of length n that avoid the patterns 1234 and 2341.

For the DM seminar schedule, see:

`http://www.people.vcu.edu/~clarson/DM-seminar.html`