**Radical Pi presents:** 



## Quantum Mathematics

## by Sergei Chmutov

From 1687, when mathematics was separated from philosophy by Newton, mathematics was inspired, motivated, and stimulated by physics. This process continues nowadays, and it will continue in the nearest future, when all mathematics is going to be quantized. One example in this presentation will be quantum calculus.

Wed, Oct 10, 5 PM Undergraduate Math Lounge (MA 052) Free pizza!

$[n]_q := \frac{q^n - 1}{q - 1}$ $[n]_{-1} := [1] \times [2] \times \dots \times [n]$			$\Big]_{q} = \Big[ \begin{matrix} n-1\\k-1 \end{matrix} \Big]_{q}$	$+ q^k {n-1 \brack k}_q$
$\begin{bmatrix} n \\ k \end{bmatrix}_q \coloneqq \frac{[n]_q!}{[k]_q! [n-k]_q!}$		1	$=q^{n-k} \begin{bmatrix} n-k \\ k-k \end{bmatrix}$	$\begin{bmatrix} I \\ I \end{bmatrix}_q + \begin{bmatrix} n-I \\ k \end{bmatrix}_q$
	1 1+	- q 1	8	
	$l \qquad l+q+q^2$	$l+q+q^2$		
	$\frac{l+q+q^2}{+q^3} + \frac{l+q}{+q^3}$	$\begin{array}{c c} +2q^2 & 1+q+q^2 \\ +q^4 & +q^3 \\ \hline \\ +q^{2} & 2q^2 \\ \hline \end{array}$	1	
$1 \qquad \frac{l+q}{+q^3}$	$+q^{2}$ $+q^{4}$ $+2q^{3}+2q^{4}$ $+q^{4}$ $+q^{5}+q^{6}$	$^{1+q+2q}_{+2q^{3}+2q^{4}}$ $ 1+q _{+q^{5}+q^{6}}$ $+q^{3}$	$+q^2$ $+q^4$ I	

Quantum Pascal triangle