

1040-22-20

Alexander Anatoljevich Klyachko* (klyachko@fen.bilkent.edu.tr), Bilkent University,
Bilkent, 06800 Ankara, Turkey. *Pauli principle revisited.*

The Pauli exclusion principle, discovered in 1925, claims that no quantum state can be occupied by more than one electron. In terms of the electron density matrix ρ this amounts to the inequality $\langle \psi | \rho | \psi \rangle \leq 1$, that bounds its eigenvalues by one. The following year Heisenberg and Dirac replaced the Pauli principle by skew symmetry of a multi-electron wave function. The subject of this talk is the impact of this replacement on spectrum of the electron density matrix, that goes far beyond the original Pauli constraint. I'll give a complete solution of this longstanding problem based on representation theory, noncommutative moment polytopes, covariants of multivectors, and things like these. (Received December 30, 2007)