

1025-57-84

**Sergei K. Lando\*** ([lando@mccme.ru](mailto:lando@mccme.ru)), Independent University of Moscow, 11 Bol. Vlassievskii, Moscow, 121002, Russia. *An algebro-geometric proof of Witten's conjecture.*

The talk is based on a joint work with M.Kazaryan, which contains a new transparent proof of the celebrated Witten conjecture. The conjecture, whose first proof was given by M. Kontsevich, states that the generating function for the intersection indices of  $\psi$ -classes on moduli spaces of complex curves satisfies the Korteweg–de Vries equation. The proof is based on the analysis of the relationship between the intersection indices and Hurwitz numbers enumerating ramified coverings of the 2-sphere. Due to the work by A. Okounkov, a generating function for Hurwitz numbers is known to satisfy the Kadomtsev–Petviashvili integrable hierarchy, and the passage to the KdV equation is achieved by inverting the ELSV formula, which expresses the Hurwitz numbers in terms of certain intersection indices on moduli spaces of curves. (Received January 16, 2007)