

Short Visit Scientific report  
**Quantum spectral curves and Manin Matrices**

As it was scheduled, in the visit I made to Prof V. Rubtsov in Angers, the study of the algebraic properties of "quantum spectral curves" or "quantum characteristic polynomial" of Lax operators  $L(z)$  associated with quantum spin integrable systems was pursued.

In a recent paper by A. Chervov and myself (*Manin matrices and Talalaev's formula*, J. Phys. A: Math. Theor. *41* (2008)) the relevance of the notion of "Manin Matrix" in this set up was highlighted, and basic properties discussed.

During the visit, we have basically completed, together with Dr. A Chervov who was also present in Angers, the preparation of a paper, to be titled *Algebraic properties of Manin Matrices. I*.

This paper contains the appropriate version of Schur's formula for complements and Jacobi's ratio theorem, the Aronszain-Weinstien formula, Plucker relations, the relationj of Manin matrices with the theory of *quasideterminants* of Gel'fand–Retakh and further material. We plan to post the preprint in the "Arxiv" and send it to a suitable journal in a few weeks. This delay w.r.t the original plans is due to the fact that we feel the opportunity to expand the present version with a section containing new Binet-type formulas, that we discovered during our discussions.

We also made progress in the theory of  $q$ -Manin matrices. This will be the subject of a further forthcoming paper, in collaboration also with a former Ph. D. student of Prof Rubtsov's, namely A. Sylantiev.

**Further remarks:** The actual duration of the visit was 7 (seven) days, from Sept. 26th to Oct. 2nd, 2008. Also, as I joined the visit in Angers with another scientific visit, I ask only for reimbursement of the train tickets Paris/Angers/Paris (Massy-TGV).