

Short Visit Application
Quantum spectral curves for spin models
Aim of the Visit

The purpose of the visit to Angers is to study with V. Rubtsov and his group (namely, A. Chervov) algebraic properties of "quantum spectral curves" (QSP) or "quantum characteristic polynomial" of Lax operators $L(z)$ associated with quantum spin integrable systems.

The relevance of such a notion – that in some form was already present in the pioneering works of Sklyanin et. al. about R -matrices – was recently brought to the light in recent papers by Talalaev and Chervov.

We plan to study:

- a) structural properties of such "quantum" objects, and namely, check which of the usual properties of matrices, e.g. determinantal identities, Newton formulas..., carry over to the quantum case.
- b) Possible applications to the problem of quantum separation of variable problem (that is, Baxter T-Q equation). In particular, we plan to compare this framework with the results presented in the paper "COMMUTING FAMILIES IN SKEW FIELDS AND QUANTIZATION OF BEAUVILLE'S FIBRATION" by B. Enriquez and V. Rubtsov (Duke Math. J., **119**, 2003).

Host details:

Prof. Vladimir ROUBTSOV
LAREMA, UMR 6093 DU CNRS,
Département de Mathématiques
Université d'Angers, 2 Boulevard Lavoisier, 49045 Angers cedex 01.
Telephone : +33 (0)2 41 73 50 27, FAX : +33 (0)2 41 73 54 54
e-mail : Vladimir.Roubtsov@univ-angers.fr.

Gregorio FALQUI

Brief Curriculum vitæ et studiorum

Personal Data:

- Born April, 15th, 1960
- Degree in Physics, University of Milano, 1985.
- Ph. D. in Mathematical Physics, SISSA – Trieste, 1990
- *Ricercatore*, SISSA – Trieste (1994)
- Associate Professor, SISSA – Trieste (2002)
- Associate Professor, Università di Milano–Bicocca, (2005).

Reserch Interests

- Algebraic Integrability, Separation of Variables, and quantization.
- Hamiltonian aspects of systems of KdV type.
- Geometry of Integrable Systems.
- W-Algebras, higher genus Toda theories, and Higgs–Hitchin systems.

Research Activity

I am the (co)-author of some 40 research papers. Among the most recent:

- G. Falqui, F. Musso, *Quantisation of bending flows*, Czech. J. Phys. **56** (2006) 1143-1148.
- G. Falqui, F. Musso, *On Separation of Variables for Homogeneous $SL(r)$ Gaudin Systems*, Math. Phys. Anal. Geom. **9** (2006), 233-262
- G. Falqui, *On a Camassa-Holm type equation with two dependent variables*, J.Phys. A: Math. Gen. **39** (2006), 327–342.
- G. Falqui, M. Pedroni, *Gel'fand-Zakharevich Systems and Algebraic Integrability: the Volterra Lattice Revisited*, Reg. & Chao. Dyn., **10** (2005), 399–412
- C. Bartocci, G. Falqui, M. Pedroni, *A geometric approach to the separability of the Neumann-Rosochatius system*. SISSA preprint 62/2003/FM, Diff. Geom. Appl.**21** (2004), 349–260.

I gave some 30 talks and seminars. Among the most recent:

Stockholm, “Enigma Conference on Mathematical Physics”, June 2007

Hanoi, Conference “Geometry of Integrable Systems”, April 2007.

Dipartimento di Fisica, Università di Roma TRE, February 2007.

Colmenarejo (Madrid) Workshop “ Integrable Systems in Applied Mathematics” September 2006.

Praha, “Quantum and classical Integrable Systems”, June 2006

I currently am a participant of the ESF Recherche programme MISGAM, and of the Marie Curie FP6 RTN ”ENIGMA”.