

Friday, October 27th (at 4.00pm, UK time)

**Taras Skrypnyk (University of Leeds)**

*Title:* Separation of variables: "the magic recipe" revisited.

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**ABSTRACT**

We consider the problem of separation of variables for the integrable Hamiltonian systems, possessing  $gl(n)$ -valued spectral parameter-dependent Lax matrices that satisfy:

1. linear Poisson brackets with general  $gl(n) \otimes gl(n)$ -valued classical  $r$ -matrices,
2. quadratic Poisson brackets of Sklyanin with general skew-symmetric  $gl(n) \otimes gl(n)$ -valued classical  $r$ -matrices,
3. quadratic Poisson brackets of Freidel and Maillet with general  $gl(n) \otimes gl(n)$ -valued spectral-parameter dependent  $a$ - $b$ - $c$ - $d$  tensors.

We formulate, in terms of the corresponding  $r$ -matrices and  $a$ - $b$ - $c$ - $d$  tensors a simple, sufficient condition that guarantees that "separating polynomials" of Sklyanin-Scott-Gekhtman produce a system of canonical variables. We consider several examples of classical  $r$  and  $a$ - $b$ - $c$ - $d$  matrices satisfying the above conditions and of their Lax matrices whose separating polynomials define a complete set of separated variables for the corresponding integrable models.

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