Title of the Report:

"The classsical rational Lax matrices versus the Yang-Baxter equation canonical solution"

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The report concerns the well known problem of describing classical rational Lax matrices $L(\lambda), \lambda \in \mathbb{C}$, satisfying the involutivity condition

$$\{L(\lambda)\otimes, L(\mu)\} = [R(\lambda-\mu), L(\lambda)\otimes L(\mu)], \tag{1}$$

where $R(\lambda) \in End_{\mathbb{C}}(V\otimes V)$ is the canonical (universal) solution to the Yang-Baxter equation

$$(R\otimes 1)(1\otimes R)(R\otimes 1) = (1\otimes R)(R\otimes 1)(1\otimes R) \tag{2}$$

for a representation $\rho : \mathcal{G} \rightarrow End_{\mathbb{C}}(V)$ of any semisimple Lie algebra $\mathcal{G}$.

It is demonstrated that the rational $L(\lambda)$-operator of the form

$$L(\lambda) = \frac{\lambda I - S}{\lambda - a}, \qquad a \in \mathbb{C}, \tag{3}$$

satisfies (1) if and only if the following *quadratic condition*

$$c_0\rho(S)^2 + c_1\rho(S) + c_2 I = 0 \tag{4}$$

holds for some constant numbers $c_j \in \mathbb{C}, j = \overline{1,3}$.

References

[1] L. D. Faddeev and L. A. Takhtadjan, *Hamiltonian methods in the theory of solitons* (Springer, New York, Berlin, 1986).

[2] A.G. Reyman, M.A. Semenov-Tian-Shansky, *Integrable systems*, Moscow, Izhevsk, 2003