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**Zhaohu Nie\*** ([zhaohu.nie@usu.edu](mailto:zhaohu.nie@usu.edu)), Department of Mathematics and Statistics, Utah State University, Logan, UT 84322-3900. *Toda field theories and integral curves of standard differential systems.*

We will talk about three relations between the Toda field theory associated to a simple Lie algebra and the integral curves of the standard differential system on the corresponding complete flag variety.

First, we establish an isomorphism concerning regular functions on the jet space and on the unipotent subgroup in the setting of a simple Lie group.

Using this result, we then show that in the sense of differential systems, after restricting one independent variable to a constant the Toda field theory becomes the system for integral curves of the standard differential system on a complete flag variety.

Finally, we establish that, in terms of differential invariants, the Toda field theory is the quotient of the product of two such systems by a natural group action. (Received August 18, 2016)