

Meeting: 1006, Lubbock, Texas, SS 3A, Special Session on Classical and Differential Galois Theory

1006-34-123 **Jinzhi Lei*** (jzlei@mail.tsinghua.edu.cn), Zhou Pei-Yuan Center for Applied Mathematics,
Tsinghua University, 100084 Beijing, Peoples Rep of China. *Differential Galois Theory of Second
Order Polynomial System*. Preliminary report.

Differential Galois theory of linear differential equation had played essential roles in the theory of integrability of linear differential equation. In this paper we shall extend the theory to second order polynomial system. We shall define, for polynomial system, the differential Galois group, shall study the structure of the group, and prove the result that the second order polynomial system is Liouvillian integrable if and only if the differential Galois group is solvable. (Received February 11, 2005)