

Polynomial automorphisms and strongly normal extensions of differential fields

Zbigniew Hajto (UJ)

In 2003 Jerald Joseph Kovacic published his very important work "The differential Galois theory of strongly normal extensions" [1] in which he reconstructed Kolchin's fundamental ideas of differential Galois theory in the modern setting of differential algebra. In the talk, following the philosophy of Kovacic I will present a differential version of the theory of polynomial automorphisms starting from Picard-Vessiot theory [2] and will discuss deep relationship with tensor products and strongly normal extensions. Finally I will mention some recent computational results on polynomial automorphisms and Jacobian Conjecture [3].

- [1] J. J. Kovacic, *The differential Galois theory of strongly normal extensions*, Trans. Amer. Math. Soc. 355 (2003), 4475-4522.
- [2] T. Crespo, Z. Hajto, *Picard-Vessiot theory and the Jacobian problem*, Israel Journal of Mathematics 186 (2011), 401-406.
- [3] E. Adamus, P. Bogdan, T. Crespo, Z. Hajto, *An effective study of polynomial maps*, Journal of Algebra and Its Applications Vol. 16, No 5 (2017) to appear.