Differential algebra goes back to the last century with the pionneering works of Picart, Vessiot. The main idea was to exploit the relationship between algebraic and differential equations, and Janet (1920) translated to the differential case some methods introduced by Hilbert, improving then previous result by Riquier.

These results were an inspiration to the american school of Ritt (1930) and his continuators, Raudenbush, Levi and Kolchin who gave a new impulse to the diferential Galois theory of Picart and Vessiot. Mostly, Ritt is the real fundator of differetial algebra, even if he was an analyst at hearth. His method was also mostly a constructive one, so he introduced genuine algorithms to compute characteristic sets, and that most of his theoretical proofs could also be turned to become algorithms on modern computers.

This was done by the chineese school of WU Wentsün at Beijing and his continuators, mostly to prove theorems in algebraic geometry, using the restriction of the method to the pure algebraic case. The computations in the differential one are more complicated and it seems that we are here far from efficiency.

The main issues in this direction are to avoid repeated factorizations in towers of field extentions—for efficiency, and also to test whever the different components given by the Ritt method are included one in the other—to get a more informative result. The low power theorem of Ritt and Levi only give a partial answer to this problem.

One other method for elimination in differential algebra were given by Seidenberg after the work of Ritt. One may also quote the work of Pommaret after Spencer, and the of standard bases of differential ideals, introduced by G. Carra' Ferro.

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