# Differential Chow Form

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In this talk, an intersection theory for generic differential polynomials is presented. The intersection of an irreducible differential variety of dimension $d$ and order $h$ with a generic differential hypersurface of order $s$ is shown to be an irreducible variety of dimension $d-1$ and order $h+s$. As a consequence, the dimension conjecture for generic differential polynomials is proved. Based on the intersection theory, the Chow form for an irreducible differential variety is defined and most of the properties of the Chow form in the algebraic case are extended to its differential counterpart. Furthermore, the generalized differential Chow form is defined and its properties are proved. As an application of the generalized differential Chow form, the differential resultant of $n+1$ generic differential polynomials in $n$ variables is defined and properties similar to that of the Sylvester resultant of two univariate polynomials are proved.

This is joint work with Xiao-Shan Gao and Wei Li.