

DIFFERENTIAL RESULTANTS

SCOTT MCCALLUM,
DEPARTMENT OF COMPUTING, MACQUARIE UNIVERSITY INTERNATIONAL
COLLEGE, SYDNEY, AUSTRALIA

My talk will describe joint work with Franz Winkler from 2012 on differential resultants. We aimed to collaborate on this intriguing, yet perhaps not so well known, topic in computational algebra and analysis because of its potential usefulness in solving systems of differential equations. Though neither of us had much prior experience with the subject itself, we hoped to make some progress with it by combining our expertise in different but related areas of symbolic computation. We also aimed to enlist the help of colleagues and students in our research endeavour.

The subject has its roots in the work of Ritt in the 1930s. It was taken up and developed considerably by Chardin and Carra'-Ferro in the 1990s, then by Rueda, Sendra, Gao and others from the 2000s to the present. Our own contribution so far has mainly been a new exposition of some of the classical aspects, with some fresh perspectives on the relation between differential and algebraic resultants. With the help of Sonia Rueda we also formulated a list of questions for investigation. Hopefully Franz's imminent retirement (and my own semi-retirement) will bring opportunities for substantial progress in the years ahead.