

DISCRETE MOVING FRAMES WITH APPLICATIONS

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Lie group based moving frames offer a significant new symbolic technology for the study of differential systems. By taking a sequence of frames, many of the excellent features of frames can be adapted to working with difference problems. Indeed, one can obtain a small set of generators of the algebra of invariants, and recurrence relations playing the role of differential syzygies. As for smooth frames, the relations on the difference invariants can be effectively and efficiently computed, without solving for the discrete frame.

In this talk, I will give an overview of the ideas, and show some applications to the difference calculus of variations.

Joint work with Gloria Mari Beffa (University of Madison Wisconsin, USA), Peter Hydon (University of Surrey, UK) and Linyu Peng (Waseda University, Japan).