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Evelyne Hubert* (evelyne.hubert@sophia.inria.fr), INRIA, Galaad, 06902 Sophia Antipolis, France. *Algebra of Differential Invariants*.

For a given group action, I give three algorithmic descriptions of the algebra of differential invariants as given by generators and syzygies. The normalized and edge invariants were the focus in the reinterpretation of the moving frame method by Fels & Olver (1999). My contribution here is first to exhibit a set of syzygies for the normalized invariants that can be written down with minimal information on the group action (namely the infinitesimal generators) and show its completeness. Second, I provide the adequate general concept of edge invariants (Olver 2007) and show their generating properties. The syzygies for edge invariants are obtained by applying the algorithms for differential elimination that I generalized to non-commuting derivations.

Another contribution is to exhibit the generating and rewriting properties of Maurer-Cartan invariants. Those have desirable properties from the computational point of view. They are all the more meaningful when one understands that they are the differential invariants that come into play in the moving frame method as practiced by Griffiths (1974) and differential geometers. The syzygies for the Maurer-Cartan invariants naturally follow from the structure equations for the group. (Received February 11, 2010)