

1139-53-350

Ian Alexander Becket Strachan* (ian.strachan@glasgow.ac.uk), School of Mathematics and Statistics, University of Glasgow, Glasgow, G12 8SQ, United Kingdom. *Darboux Coordinates for Gelfand-Dorfman-Balinski-Novikov Hamiltonian Structures: from Novikov algebras to flat coordinates via cyclic quotient singularities.*

Linear Hamiltonian structures are, by the work of Gelfand and Dorfman, defined in terms of a so-called Novikov algebra. But by the fundamental result of Dubrovin and Novikov, these Hamiltonian structures are defined by a flat metric and hence there must exist a coordinate system which reduces the metric (defined by the Novikov algebra) to a constant, or Darboux, form. The coordinate transformation may also be considered as a (dispersionless) Muiira transformation.

In the simplest case - studied by Balinski and Novikov - the algebra is commutative and the algebra reduces to a Frobenius algebra. In this case the transformation is just given by a quadratic change of variable.

By solving the associated Gauss-Manin equations in the general, non-commutative, case, the Darboux coordinates may be found in full generality. In this work, this construction is given and, in the case of a finite monodromy group, the Darboux coordinates are given by certain invariant polynomials (invariant under the action of a cyclic group). These are directly related to certain quotient spaces - cyclic quotient singularities. (Received February 16, 2018)