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EXTENDING LIOUVILLIAN INTEGRABILITY

When considering vector fields with multiple Liouvillian first integrals, it seems very natural to also consider integrals which can be obtained by quadratures along the leaves of previously defined first integrals. We explain how this concept can be made algebraic and give some preliminary results in the case of three-dimensional vector fields.

This work described is part of an ongoing project in collaboration with Chara Pantazi, Daniel Robertz and Sebastian Walcher.