

b^m -Symplectic structures: going to infinity and coming back

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Several problems from celestial mechanics (like the elliptic restricted 3-body problem) and their singularities (“collisions”) can be described using symplectic forms away from a critical set (known in the literature of celestial mechanics as the line at infinity or the collision manifold). In these examples the symplectic form either vanishes or goes to infinity along the critical set. It is possible to give a global description of these objects using b^m -symplectic forms and folded symplectic forms. We will present some of these examples [1] and we will quickly review some results concerning dynamics ([4], [5]).

We will explain a desingularization procedure called deblogging [3] which associates a family of symplectic forms or folded symplectic forms to a given b^m -symplectic form depending on the parity of m . Time permitting, several applications of this procedure will be discussed.

References

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- [4] A. Kiesenhofer and E. Miranda, *Cotangent models for integrable systems*, to appear at Communications in Mathematical Physics.
- [5] A. Kiesenhofer, E. Miranda and G. Scott, *Action-angle variables and a KAM theorem for b -Poisson manifolds*, J. Math. Pures Appl. (9) 105 (2016), no. 1, 66–85.