Double Lie groupoids and their applications to integrability problems

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Abstract

We will see how a special class of double Lie groupoids allows us to study the integrability of Poisson manifolds obtained by reduction of Dirac structures. As a consequence we will see that an interesting family of Poisson homogeneous spaces associated to symplectic groupoids of Poisson-Lie groups are integrable. We will also obtain a simple integrability criterion for Poisson manifolds obtained by reduction of a Hamiltonian quasi-Poisson manifold and hence we shall describe an integration of the Poisson structures on moduli spaces of flat connections. Finally, we shall see how this approach can shed some light on the integrability of LA-groupoids.