CONFIGURATION SPACES AND ALGEBROIDS

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Abstract

Let M be complete, connected, oriented, C^∞ (noncompact) Riemannian manifold of dimension d. The configuration space Γ_M over M is the set of locally finite subsets in M:

$$\Gamma_M := \{\gamma \subset M : \ \mathrm{card}\,(\gamma \cap K) < \infty \text{ for each compact } K \subset M\}.$$

Any $\gamma \in \Gamma_M$ is identified with positive integer-valued Radon measure. The tangent space to Γ_M at a point γ is defined as Hilbert space $T_\gamma \Gamma_M := L^2(M \to TM; \gamma)$ (or, equivalently, $T_\gamma \Gamma_M := \bigoplus_{x \in \gamma} T_x M$). (See S.Albeverio, Yu.G.Kondratiev, M.Röckner, JFA 157 (1998).) High order differential forms and de Rham cohomology on configuration spaces can also be considered (see S.Albeverio, A.Daletskii, E.Lytvynov, JGeomPhys, to appear). The main topic of discussion is to consider these objects from the Lie algebriods theory point of view.

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