DIFFEOMORPHISM GROUPS AND CURRENT ALGEBRAS: configuration space analysis in quantum theory

S. Albeverio
Fakultät für Mathematik, Ruhr–Universität,
D 44780 Bochum (Germany)

Yu. G. Kondratiev
Forschungszentrum BiBoS, Bielefeld Universität,
D 33615 Bielefeld (Germany);
Institute of Mathematics, NASU,
252601 Kiev (Ukraine)

M. Röckner
Fakultät für Mathematik, Bielefeld Universität,
D 33615 Bielefeld (Germany)

Abstract

The constuction of models of non-relativistic quantum fields via current algebra representations is presented using a natural differential geometry of the configuration space Γ of particles, the corresponding classical Dirichlet operator associated with a Poisson measure on Γ, being the free Hamiltonian. The case with interactions is also discussed together with its relation to the problem of unitary representations of the diffeomorphism group on $\mathbb{R}^d$.

Contents