1100-22-205 **Stephane Merigon***, Dpt of Mathematics, LSU, Baton Rouge, LA 70803. *Integrability of unitary representations on reproducing kernel spaces.*

Let (G, θ) be a symmetric Lie group, $\mathfrak{g} = \mathfrak{h} + \mathfrak{q}$ its Lie algebra, $\mathfrak{g}_c = \mathfrak{h} + i\mathfrak{q}$ the c-dual Lie algebra and G_c the simply connected Lie group with Lie algebra $\mathfrak{g}_c$. Motivated by Representation Theory and Quantum Field Theory one considers:

(i) An involutive representation of an open semigroup S of G invariant under the involution $g^* = \theta(g)^{-1}$.

(ii) A reflection positive representation of (G, θ).

(iii) A local (or virtual) representation of (G, θ).

In each case the representation leads to a representation of $\mathfrak{g}_c$ by skewsymmetric operators on a dense domain $\mathcal{D}$ of a Hilbert sapce $\mathcal{H}$. Using smooth reproducing kernels and reproducing kernels given by distributions we are able to provide a framework unifying all situations above and to prove that the representation of $\mathfrak{g}_c$ integrates to a unitary representation of G_c on $\mathcal{H}$. Our results apply to infinite dimensional Lie groups as well. This is joint work with Karl-Hermann Neeb and Gestur Olafsson. (Received February 08, 2014)