1043-47-90 **Camillo Trapani*** (`trapani@unipa.it`), Dipartimento di Matematica, Universita' di Palermo, Via Archirafi, 34, Palermo, Italy. *Unbounded representations of partial *-algebras and generalized Stinespring theorem.*

A *partial *-algebra* is a complex vector space $\mathfrak{A}$, with an involution $x \mapsto x^*$ and a distributive partial multiplication defined on a set $\Gamma \subset \mathfrak{A} \times \mathfrak{A}$.

Many results have been obtained for the *concrete* case of partial *-algebras of closable operators in Hilbert space (partial O*-algebras) and on the structure of abstract partial *-algebras. The link between the abstract case and the concrete realization is given, of course, by *-representations.

The existence of *-representations of a partial *-algebra $\mathfrak{A}$ is linked with the notion of *biweight*: this is, shortly, a noneverywhere defined positive sesquilinear φ enjoying certain *invariance* properties. Every biweight gives rise to a Gelfand - Naimark - Segal (GNS) representation of $\mathfrak{A}$ into a partial O*-algebra.

After discussing the essential points of the representation theory of partial *-algebras, we will present some recent results on the identification of partial *-algebras which possess a sufficiently many nontrivial *-representations and a generalization of the Stinespring dilation theorem for completely positive bilinear maps on partial *-algebras. (Received August 20, 2008)