Summary

This thesis is dedicated to the analysis of the inducing procedure on group graded $*$-algebras. It is focused on unbounded $*$-representations induced by one-dimensional $*$-representations, which are defined on the zero $*$-subalgebra given by the grading.

The first non-introductory section describes zero $*$-algebras of the real forms of the quantum Euclidean and the quantum symplectic spaces. It contains a sufficient and necessary condition for the positivity of characters for the real form of the coordinate algebra of the quantum Euclidean space.

The next section describes some observations on gradings on matrix spaces and demonstrates an example of an induced $*$-representation with a non-commutative zero $*$-subalgebra.

In the fourth section the induced $*$-representations of the quantum $*$-algebra $\mathcal{O}(SU_q(1,1))$ are computed, parametrized and assigned to classical $*$-representations.

An important part of the thesis is the fifth section. It contains the analysis of the induced $*$-representations of the quantum $*$-algebra $\mathcal{U}_q(su_{1,1})$, which is a much more involved $*$-algebra then the preceding one. The main theorem of this sections shows that the inducing procedure with the natural grading induces up to unitary equivalence all classical $*$-representations computed by Burban and Klymik in 1993. Moreover, subsets of the induced equivalence classes are assigned to the various corresponding classical series.

Another core section of the thesis is the sixth where surjectivity of the inducing procedure is discussed. It containts a proof of a surjectivity theorem for finitely generated $*$-algebras and a given set of $*$-representations acting as weighted shift operators.

The seventh and last section describes the first example of the inducing procedure applied on a quantum $*$-algebra with a non-commutative zero $*$-subalgebra.