

Let A be a unital separable C^* -algebra and H be an infinite dimensional Hilbert space. In 1976, D. Voiculescu proved that any two unital essential $*$ -homomorphisms from A to $B(H)$ are approximately unitarily equivalent. In the first part of the talk I will present localized versions of Voiculescu's theorem, which are obtained by specializing either the co-domain or the domain of the $*$ -homomorphisms. These results provide new characterizations of properly infinite injective von Neumann factors and of nuclear separable C^* -algebras. This is a joint work with A. Ciuperca, Z. Niu and P. Ng.

In 1967, Powers proved that two representations π_1 and π_2 (on a separable Hilbert space) of a UHF algebra A are algebraically equivalent iff there is an automorphism α of A such that $\pi_1 \circ \alpha$ and π_2 are quasi-equivalent. In the second part of the talk I will present the extension of this result to simple separable nuclear C^* -algebras when the representations are of type III. This result builds on the methods developed in the paper mentioned above; it solves a question of A. Kishimoto and was obtained in a joint work with Ping Ng.