

Title: Lifting of Nilpotent Contractions

We will show that when given a surjective  $*$ -homomorphism  $\pi : A \rightarrow B$  between  $C^*$ -algebras and an element  $b \in B$  satisfying  $b^n = 0$  and  $\|b\| \leq 1$ , there exists  $a \in A$  such that  $\pi(a) = b$  and  $a$  satisfies the same relations. In other words, nilpotent contractions are liftable. Along the way, we will introduce the necessary background on  $M$ -ideals, some properties of  $SAW^*$  algebras, and basic results in the theory of lifting.