

## Square root closed $C^*$ -algebras

Munehiro Yamamoto  
Department of Mathematics, Chiba University, Japan  
myamamoto@g.math.s.chiba-u.ac.jp

We consider the approximately square root closed property for a  $C^*$ -algebra.

**Definition 1** *We say that a  $C^*$ -algebra  $A$  is approximately square root closed if for any  $\varepsilon > 0$  and any normal element  $a \in A$ , there exists a normal element  $b \in A$  such that  $\|a - b^2\| < \varepsilon$ .*

In this talk, we give an overview on approximately square root closed  $C^*$ -algebras and show the following results.

**Theorem 1** *Every  $AI$ -algebra is approximately square root closed.*

**Theorem 2** *For a purely infinite simple unital  $C^*$ -algebra  $A$ ,  $A$  is approximately square root closed if and only if  $K_1(A)$  is 2-divisible.*