MAXIMAL NUMERICAL RANGE AND QUADRATIC ELEMENTS IN A $C^*$-ALGEBRA

E. H. BENABDI, M. BARRAA, M. K. CHRAIBI AND A. BAGHDAD*

Abstract. In this paper, we give a description of the maximal numerical range of a hyponormal element and a characterization of a normaloid element in a $C^*$-algebra. We also give an explicit formula for the maximal numerical range of a quadratic operator acting on a complex Hilbert space. As a consequence, we determine the maximal numerical range of a rank-one operator.

Mathematics subject classification (2020): Primary 46L05; Secondary 47A12, 47A63.

Keywords and phrases: Quadratic operator, $C^*$-algebra, numerical range, maximal numerical range.

REFERENCES