

Abstract

The Aluthge transform T_e of a bounded linear operator T on a complex Hilbert space X is the operator $|T|^{-1/2} U |T|^{1/2}$. Here, $T = U|T|$ is any polar decomposition of T with U a partial isometry and $|T| = (T^*T)^{1/2}$. This study of the Aluthge transform T_e was introduced and studied by Aluthge in his study of p -hyponormal operators. Since its conception, this notion has received much attention for a single operator T . In order to understand the joint behaviour of Aluthge transform of several operators T_1, \dots, T_m , researchers such as Cyprian have studied the Aluthge transform of an m -tuple operator $T = (T_1, \dots, T_m)$. For instance, the properties of the joint essential numerical range of Aluthge transform for an m -tuple operator $T = (T_1, \dots, T_m)$ were studied by Cyprian. However, nothing is known about the joint maximal numerical range of Aluthge transform T_e of an m -tuple operator $T = (T_1, \dots, T_m)$. This paper focuses on the study of the properties of the joint maximal numerical range of Aluthge transform for an m -tuple operator $T = (T_1, \dots, T_m)$. This study will help in the development of the research on hyponormal operators and semi-hyponormal operators.