Norms of derivation associated with idempotents and unitary operators

The study of operators has continued to attract the attention of many researchers. Of special interest are the calculations of norms of these operators. Johnson Stampfli wrote a paper on the norms of derivation on algebra of bounded linear endomorphisms of ϕ. Obonyo and Agure in one of their papers have given their study on the norms of inner derivations on norm ideals followed by another one on norms of derivations implemented by S-universal operators. Ivan Vidar defined a bounded operator acting in a Hilbert space as idempotent if $A^2 = A$. This study is going to concentrate on the norms of derivations induced by orthogonal idempotents and unitary operators. Let H be an infinite dimensional complex Hilbert space and B(H) the algebra of all bounded linear operators on H. A generalized derivation is an operator defined by $\delta_{A,B}(X)=AX- XB$, for all X in B(H) and B fixed in B(H). When A=B then we have an inner derivation defined by $\delta_A(X)= AX- XA$ for all X in B(H) and A fixed in B(H). A lot of studies have been done on characterization of derivations for instance Kittaneh gave commutator inequalities associated with the polar decomposition. Mansour and Bouzenada obtained norm estimates of commutator between subnormal operators but posed a problem that states that if $\delta_A(X) = AX-XA$ is such that A=A + iC and X=B + iD, then what are possible estimates for $\delta_A(X)$ if A,B,C,D stand taken as contractions? Moreover, can there be best estimate for other classes of operators? In this presentation therefore we consider the class of unitary operators and orthogonal idempotents and discuss the norms of derivations associated with the orthogonal idempotents and unitary operators