

# The Essential Spectrum of the Essentially Isometric Operator

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*Abstract.* Let  $T$  be a contraction on a complex, separable, infinite dimensional Hilbert space and let  $\sigma(T)$  (resp.  $\sigma_e(T)$ ) be its spectrum (resp. essential spectrum). We assume that  $T$  is an essentially isometric operator, that is  $I_H - T^*T$  is compact. We show that if  $D \setminus \sigma(T) \neq \emptyset$ , then for every  $f$  from the disc-algebra,

$$\sigma_e(f(T)) = f(\sigma_e(T)),$$

where  $D$  is the open unit disc. In addition, if  $T$  lies in the class  $C_0 \cup C_{.0}$ , then

$$\sigma_e(f(T)) = f(\sigma(T) \cap \Gamma),$$

where  $\Gamma$  is the unit circle. Some related problems are also discussed.