



Antonia Cardwell (Antonia.Cardwell@millersville.edu),  
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Millersville, PA 17551, USA, *An extension of a lemma  
by Phelps to Hilbert Spaces.*

ABSTRACT. Consider  $A$  and  $B$  two norm-one linear operators on a real infinite-dimensional Hilbert space. We will prove that if, for  $x, y$  in the unit ball,  $Ax$  orthogonal to  $y$  implies  $Bx$  is "almost" orthogonal to  $y$ , then one of  $\|A - B\|$  and  $\|A + B\|$  must be small. This is an extension of a lemma proved by R. Phelps in 1960.