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*Totally bipartite Leonard pairs and Leonard triples.*

Let  $\mathbb{K}$  denote a field and let  $V$  denote a vector space over  $\mathbb{K}$  of positive finite dimension. A Leonard pair is an ordered pair of linear transformations in  $\text{End}(V)$  such that, for each transformation, there exists a basis for which the matrix representing that transformation is diagonal and the matrix representing the other transformation is irreducible tridiagonal. Related to a Leonard pair is a Leonard triple, an ordered triple of linear transformations in  $\text{End}(V)$  such that, for each transformation, there exists a basis for which the matrix representing that transformation is diagonal and the matrices representing the other transformations are irreducible tridiagonal. A Leonard pair or Leonard triple is said to be totally bipartite whenever the diagonal entries of the tridiagonal matrices are all zero. We classify the totally bipartite Leonard pairs and Leonard triples up to isomorphism and show that any totally bipartite Leonard pair can be extended to a totally bipartite Leonard triple. (Received March 04, 2013)