1058-15-108 **Paul M Terwilliger*** (terwilli@math.wisc.edu), Math Department, University of Wisconsin, 480 Lincoln Drive, Madison, WI 53706. *The classification of tridiagonal pairs.*

Let F denote a field and let V denote a vector space over F with finite positive dimension. We consider a pair of linear transformations $A : V \to V$ and $A^* : V \to V$ that satisfy the following conditions: (i) each of A, A^* is diagonalizable; (ii) there exists an ordering $\{V_i\}_{i=0}^{d}$ of the eigenspaces of A such that $A^*V_i \subseteq V_{i-1}+V_i+V_{i+1}$ for $0 \le i \le d$, where $V_{-1} = 0$ and $V_{d+1} = 0$; (iii) there exists an ordering $\{V_i^*\}_{i=0}^{\delta}$ of the eigenspaces of A^* such that $AV_i^* \subseteq V_{i-1}^* + V_i^* + V_{i+1}^*$ for $0 \le i \le \delta$, where $V_{-1}^* = 0$ and $V_{\delta+1}^* = 0$; (iv) there is no subspace W of V such that $AW \subseteq W$, $A^*W \subseteq W$, $W \neq 0$, $W \neq V$. We call such a pair a *tridiagonal pair* on V. We classify up to isomorphism the tridiagonal pairs over an algebraically closed field. We discuss a connection to the orthogonal polynomials from the terminating branch of the Askey-scheme. This is joint work with Tatsuro Ito and Kazumasa Nomura. (Received February 09, 2010)