1090-15-413 **Alison Gordon Lynch*** (gordon@math.wisc.edu), Department of Mathematics, University of Wisconsin, 480 Lincoln Drive, Madison, WI 53706. *Cauchy Pairs and Cauchy Matrices.*

Let $\mathbb{K}$ denote a field and let V denote a vector space over $\mathbb{K}$ with finite positive dimension. We consider a pair of linear transformations $X : V \to V$ and $Y : V \to V$ that satisfies the following three conditions.

(i) Each of X, Y is diagonalizable.

(ii) $X - Y$ is rank 1.

(iii) There does not exist a subspace W of V such that $XW \subseteq W, YW \subseteq W, W \neq 0, W \neq V$.

We call such a pair a Cauchy pair on V. We characterize these pairs and their relationship to Cauchy matrices. Specifically, we show that every Cauchy matrix gives rise to a Cauchy pair and that every Cauchy pair has a canonical transition matrix which is Cauchy. Moreover, we show that this correspondence is bijective up to affine isomorphism. (Received March 05, 2013)