1112-15-57 **Paul M Terwilliger*** (terwilli@math.wisc.edu), 480 Lincoln Drive, Madison, WI 53706.
*Lowering-Raising Triples of Linear Transformations.*

Fix a nonnegative integer $d$. Let $\mathbb{F}$ denote a field, and let $V$ denote a vector space over $\mathbb{F}$ with dimension $d+1$. By a decomposition of $V$ we mean a sequence $\{V_i\}_{i=0}^d$ of one-dimensional subspaces whose direct sum is $V$. Let $\{V_i\}_{i=0}^d$ denote a decomposition of $V$. A linear transformation $A \in \mathrm{End}(V)$ is said to lower $\{V_i\}_{i=0}^d$ whenever $AV_i = V_{i-1}$ for $1 \le i \le d$ and $AV_0 = 0$. The map $A$ is said to raise $\{V_i\}_{i=0}^d$ whenever $AV_i = V_{i+1}$ for $0 \le i \le d-1$ and $AV_d = 0$. A pair of elements $A, B$ in $\mathrm{End}(V)$ is called lowering-raising (or LR) whenever there exists a decomposition of $V$ that is lowered by $A$ and raised by $B$. A triple of elements $A, B, C$ in $\mathrm{End}(V)$ is called LR whenever any two of $A, B, C$ form an LR pair. We classify up to isomorphism the LR triples. There are nine infinite families of solutions. We show that each solution $A, B, C$ satisfies some relations that resemble the defining relations for $U_q(\mathfrak{sl}_2)$ in the equitable presentation. (Received July 11, 2015)