1106-06-1876 **Comlan de Souza*** (csouza@csufresno.edu). *Characterization of self dual lattices in* $\mathbb{R}, \mathbb{R}^2$, *and* $\mathbb{R}^3$.

Consider the linearly independent sets of real n (column) vectors $a_1, \ldots, a_n$ and the lattice generated by these vectors

$$\mathcal{L}_A := \left\{ \sum_{k=1}^{n} m_k \; a_k : m_1, \ldots, m_n \in \mathbb{Z} \right\}$$

where A is the matrix formed by these column vectors. The lattice $\mathcal{L}_{A^{-T}}$ generated by vectors biorthogonal to $a_1, \ldots, a_n$ is said to be the dual of the lattice $\mathcal{L}_A$. Moreover $\mathcal{L}_A$ is said to be self dual if and only if

$$(A^{-T})^{-1} A = A^T A$$

is a matrix of integers with determinant ± 1. We will show by an ad-hoc method, that the only self dual lattices in $\mathbb{R}, \mathbb{R}^2, \mathbb{R}^3$ are rotations of $\mathbb{Z}, \mathbb{Z} \times \mathbb{Z}$, and $\mathbb{Z} \times \mathbb{Z} \times \mathbb{Z}$. (Received September 15, 2014)