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1003-94-585 **Xiang-dong Hou*** (xhou@math.usf.edu), Department of Mathematics, University of South Florida, Tampa, FL 33620-5700. *Asymptotic Numbers of Non-Equivalent Codes in Three Notions of Equivalence.*

Let $\mathcal{V}(\mathbb{F}_q^n)$ be the set of all subspaces of $\mathbb{F}_q^n$. The following three groups act on $\mathcal{V}(\mathbb{F}_q^n)$: (i) the symmetric group on the coordinate positions of $\mathbb{F}_q^n$; (ii) the group of monomial transformations of $\mathbb{F}_q^n$; (iii) the group of semi-linear monomial transformations of $\mathbb{F}_q^n$. The orbits of $\mathcal{V}(\mathbb{F}_q^n)$ under these actions are the equivalence classes of linear codes in $\mathbb{F}_q^n$ under three notions of equivalence: permutation equivalence, monomial equivalence and equivalence. Let $N_{n,q}^{\mathfrak{S}}$, $N_{n,q}^{\mathfrak{M}}$, $N_{n,q}^{\Gamma}$ denote the numbers of the orbits under the three actions on $\mathcal{V}(\mathbb{F}_q^n)$ respectively. It was recently proved that as $n \to \infty$, $N_{n,q}^{\mathfrak{S}} \sim \frac{|\mathcal{V}(\mathbb{F}_q^n)|}{n!}$ and $N_{n,q}^{\mathfrak{M}} \sim \frac{|\mathcal{V}(\mathbb{F}_q^n)|}{n!(q-1)^{n-1}}$. In this paper, we show that $N_{n,q}^{\Gamma} \sim \frac{|\mathcal{V}(\mathbb{F}_q^n)|}{n!(q-1)^{n-1}r}$, where $q = p^r$ and p is a prime. (Received September 23, 2004)