

A relation between arithmetical functions and code systems (A joint work of Kamiya and Murata)

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Abstract

Let $n = \sum_{k=0}^{\infty} a_k(n)2^k$ ($a_k(n)$ is 0 or 1) be the 2-adic expansion of n , and define $S(n) = \sum_{k=0}^{\infty} a_k(n)$. We call this $S(n)$ as “the function sum of 2-adic digits”. We start from this function and find out an interesting relation between $S(n)$ and the arithmetical function $(-1)^{n-1}$. We can generalize this relation and talk about a connection between a set of simple arithmetic functions and Gray code-system.