Definition 1. Let $n = n_1 2^0 + n_2 2^1 + \cdots$, with $n_i \in \{0,1\}$ be the dyadic expansion of $n \in \{0,1,2,\ldots\}$. Similarly let $x = x_1 2^{-1} + x_2 2^{-2} + \cdots$ with $x_i \in \{0,1\}$ be the dyadic expansion of $x \in [0,1)$. The *sequency ordered Walsh function* is

$$\mathrm{WAL}(n,x) \coloneqq (-1)^{\sum_{i=1}^{\infty}(n_i+n_{i+1})x_i}$$

the *Paley ordered Walsh function* is

$$\mathrm{PAL}(n,x) \coloneqq (-1)^{\sum_{i=1}^{\infty} n_i x_i}$$