Ahmed–Rao bases and wavelet expansions[1]

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Given $N = 2^s$, we explicitly construct a collection of s orthogonal bases in a space of complex-valued N-periodic functions of integer argument. These bases are of the following property: elements of the r-th basis (where $r \in \{1, \dots, s\}$) take 2^r values equally spaced on a unit circle of complex plane. We show that each basis is a final one in some recurrent sequence of orthogonal bases having block structure. From blocks belonging to *different bases* of a recurrent sequence we form generalized wavelet bases constituting a wavelet packet.

For all considered bases we obtain effective formulas of decomposition and reconstruction.

References

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