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TURYN TYPE SEQUENCES OF LENGTH 34

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The Hadamard conjecture is the statement that *Hadamard matrices exist for all orders* $1, 2,$ and $4t,$ *where* $(t \geq 1)$ *is an integer.* The most compatible way of constructing Hadamard matrices is to use the Kronecker product whenever there exists a Hadamard matrix of order t above. Otherwise, the most convenient way to develop a Hadamard matrix is to use certain sequences of zeros and ones both positive and negative.

In this research, the focus is to discuss a general method to construct a set of sequences of ones, both positive and negative called Turyn type sequences which can be used to form a set of sequences with zeros and ones such as Base sequences and T sequences, which are useful in constructing certain Hadamard matrices. Turyn type sequences, $TT(n)$ are quadruples of $\{\pm 1\}$ sequences (A, B, C, D) of length $n, n, n, n-1$ respectively, where the sum of non- periodic auto correlation function of A, B and twice that of C, D vanishes everywhere except at zero.

The proposed procedure consists of segmentation algorithms of constructing $TT(34)$ that consist of three sequences of length 34 and a sequence of length 33 together with an algorithm to verify the non-periodic auto correlation condition and the properties of Turyn type sequences.

These algorithms are created treating each sequence as a binary number and try all the possible sets of sequences that satisfy the non-periodic auto correlation condition. Thereupon, by checking the properties of the Turyn type sequences using C/C++ computer program will lead to the desired set of sequences.