

Barker arrays and the Barker array conjecture

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Binary (± 1) sequences and arrays with small out-of-phase aperiodic autocorrelations have applications to modern digital communications and to radar.

In 1953 Barker introduced binary sequences whose aperiodic correlation was $\{-1, 0, 1\}$; no sequences of length greater than 13 are known.

In 1989 Alquaddoomi and R.A. Scholtz generalized Barker sequences to higher dimensions ("Barker arrays") and conjectured that no $s \times t$ Barker arrays exist, unless $s=t=2$. In this talk we investigate Barker sequences and arrays, describe related combinatorial structures (difference sets and relative difference sets) and discuss recent work on the Barker array conjecture.