JONATHAN JEDWAB, Simon Fraser University, 8888 University Drive, Burnaby, BC, V5A 1S6

Bounds on the growth rate of the peak sidelobe level of binary sequences

The peak sidelobe level of a binary sequence is the largest absolute value of all its nontrivial aperiodic autocorrelations. A classical problem of digital sequence design is to determine how slowly the peak sidelobe level of a length n binary sequence can grow, as n becomes large. Moon and Moser showed in 1968 that the growth rate of the peak sidelobe level of almost all length n binary sequences lies between order $\sqrt{n \log n}$ and $\sqrt{n}$, but in the last forty years no theoretical improvement to these bounds has been found.

I shall present numerical evidence showing how closely these bounds can be approached. A significant algorithmic improvement reveals behaviour that was previously well beyond the range of computation.

Joint work with Denis Dmitriev.