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**Bio:**

**Kai Liu earned her Master's and Ph.D. degrees from Yanshan University, China, in 2002 and 2009, respectively. She currently holds the position of Professor at the School of Information Science and Engineering (School of Software) at Yanshan University, China. Her research interests encompass coding theory, spread spectrum communication, and optical fiber communication. In 2019, she visited Missouri Science & Technology University. Kai Liu has received sponsorship from the National Natural Science Foundation of China, the Natural Science Foundation of Hebei Province, and the University Science and Technology Research Project of Hebei Province, China.**

**Speech Title:**

**Spectrally-Null-Constrained Sequence Pair Sets**

**Speech Abstract:**

We establish a collection of spectrally-null-constrained sequence pairs (SNCSPs) characterized by zero correlation zone autocorrelation and low constant cross-correlation properties. Initially, we introduce a category of equal-autocorrelation sequence pairs (EACSPs) featuring arbitrary SNC positions. Subsequently, we prove that the characteristic sequence pairs arising from the two categories of difference set pairs are indeed EACSPs with SNC characteristics. Next, we apply the Kronecker product to combine the EASCP and the Zadoff-Chu sequence set, resulting in the construction of an SNCSP set characterized by periodic spectral null constraints. In the context of a non-contiguous carrier communication system, the utilization of SNCSPs leads to the independence of transmitted and received sequences. Consequently, the flexibility of SNCSP design is enhanced, the design outcomes become more resilient, and the findings presented extend available signal choices for non-contiguous carrier communication systems.