

We investigate a blind interference alignment (BIA) scheme through staggered antenna switching over various interference networks (e.g., broadcast channel, interference channel, and cellular networks) with realistic channel assumptions. In existing BIA, the coherence time of channel is assumed to be long enough, but that may not always be true in realistic scenarios. Therefore, we propose a dynamic supersymbol design method which can construct a supersymbol with limited symbol extension that is determined by the coherence time of channel. It is demonstrated that the supersymbol block length can be reduced significantly by aligning interferences in a hierarchical manner, referred to as hierarchical BIA. The key idea of hierarchical BIA is to align interferences in groups and to use the same supersymbol structure between groups, producing aligned inter-group interferences without inner-group interference. Consequently, it is observed that with a given coherence time the proposed dynamic supersymbol design that exploits hierarchical BIA achieves higher degrees of freedom than the conventional method.