Bilkent University
Department of Mathematics

Problem Of The Month

Term: October 2016

Let $S = \{1, 2, \ldots, 2016\}$ and $A_1, A_2, \ldots, A_k$ be subsets of S such that for all $1 \leq i < j \leq k$ exactly one of the sets $A_i \cap A_j$, $A_i' \cap A_j$, $A_i \cap A_j'$, $A_i' \cap A_j'$ is empty. Determine the maximum possible value of k.

[For $A \subset S$, A' denotes the set containing all elements of S not included in A].