Odd independent sets and strong odd colorings of graphs

Y. Caro[(1)], M. Petruševski[(2)], R. Škrekovski[(3)], Zs. Tuza[(4,5)]

[(1)] University of Haifa-Oranim, Tivon, Israel
[(2)] Ss. Cyril and Methodius University in Skopje, Macedonia
[(3)] University of Ljubljana, Slovenia
[(4)] University of Pannonia, Veszprém, Hungary
[(5)] Alfréd Rényi Institute of Mathematics, Budapest, Hungary

We say that an $S \subset V(G)$ is an odd independent set in graph G if it is independent (induces no edges) and every vertex in $V \setminus S$ is adjacent either to no vertex of S or to an odd number of vertices of S. The largest cardinality of such a set is termed the odd independence number of G.

A strong odd coloring of G is a partition of the vertex set into odd independent sets; the corresponding parameter (minimum number of colors) is called strong odd chromatic number.

Beside many results concerning these notions, we also offer a large number of open problems for future research.