1147-05-243 **Shinya Fujita*** (shinya.fujita.ph.d@gmail.com), 22-2 Seto, Kanazawa-ku, Yokohama, Kanagawa 236-0027, Japan. *Some recent results on safe set problems in vertex-weighted graphs.*

In [S. Fujita, G. MacGillivray, T. Sakuma: Safe set problem on graphs. Discrete Applied Math. 215: 106-111 (2016)], the authors defined a *safe set* in a graph $G = (V(G), E(G))$ as a set S of vertices of G with the property that $|V(C)| \geq |V(D)|$ for every component C of the subgraph $G[S]$ of G induced by S and every component D of the subgraph $G - S$ of G induced by $V(G) \setminus S$ such that some vertex in C is adjacent to some vertex in D. For convenience, we call two disjoint subgraphs C and D of G *adjacent* if some vertex in C is adjacent to some vertex in D.

We can naturally extend this notion to the "weighted version". For a graph G and a weight function $w : V(G) \to Z \geq 0$, we consider the vertex weighted graph (G, w). For a set U of vertices of G, let $w(U) = \sum_{u \in U} w(u)$. A set S of vertices of G is a *weighted safe set* in G if $w(C) \geq w(D)$ for every component C of $G[S]$ and every component D of $G - S$ such that D is adjacent to C. For a given (G, w), what is the smallest cardinality of a weighted safe set?

In this talk, I would like to give a short survey on the weighted safe set problems in vertex-weighted graphs. (Received January 14, 2019)