1096-05-1300 **Stanisław P. Radziszowski*** (spr@cs.rit.edu), Department of Computer Science, Rochester Institute of Technology, Rochester, NY 14623. *Folkman Numbers: Some Results and Open Questions.*

We discuss a branch of Ramsey theory concerning edge and vertex Folkman numbers and how computational techniques can solve some problems therein. We write $G \to (a_1, \ldots, a_k; r)^e$ if for every edge k-coloring of an undirected simple graph G not containing K_r, a monochromatic K_{a_i} is forced in color i for some $i \in \{1, \ldots, k\}$. The edge Folkman number is defined as $F_e(a_1, \ldots, a_k; r) = \min\{|V(G)| : G \to (a_1, \ldots, a_k; r)^e\}$. Vertex Folkman numbers $F_v(a_1, \ldots, a_k; r)$ are defined similarly, except that we color vertices instead of edges.

$F_e(3,3;4)$ involves the smallest parameters for which the problem is open, and its value is the answer to the question "What is the smallest order N of a K_4-free graph, for which any edge 2-coloring must contain at least one monochromatic triangle?" It is known that $19 \leq N \leq 786$. We will present the background, overview related problems, and give some evidence why it is likely that $N < 100$.

For the vertex Folkman numbers, the case of special interest is $F_v(2_k; r)$, which is the order of the smallest $(k+1)$-chromatic K_r-free graph. All $F_v(2_k; r)$ are known for $k \leq r+1$. We will overview the results for $k \leq r+1$ and present some of the open cases for $k \geq r+2$. (Received September 14, 2013)