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Valentina Harizanov* (harizanv@gwu.edu), Department of Mathematics, George Washington University, Washington, DC 20052. *Khisamiev functions and algebraic structures*. Preliminary report.

N. Khisamiev introduced the notion of a limitwise monotonic function in his study of computability-theoretic properties of abelian p -groups of small Ulm length. This notion captures the dynamic enumeration of the elements in the sets being formed. More precisely, a unary function F on natural numbers is *limitwise monotonic* if there is a computable approximating binary function f such that for all i, s , we have $f(i, s) \leq f(i, s + 1)$, there is $\lim_{t \rightarrow \infty} f(i, t)$, and $F(i) = \lim_{t \rightarrow \infty} f(i, t)$. A set of natural numbers is limitwise monotonic if it is the range of a limitwise monotonic function. Limitwise monotonic functions and sets as well as their generalizations have been playing an increasingly important role in computable algebra and computable model theory. While every limitwise monotonic set is Σ_2^0 , Khisamiev showed that there is a Δ_2^0 set that is not limitwise monotonic. We will present recent results involving applications of limitwise functions to further investigate computability-theoretic properties of certain countable algebraic structures. (Received August 28, 2016)