

- ▶ ALEXANDER G. MELNIKOV, *Primitive recursive mathematics*.

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In my talk I will discuss the current state of the rapidly developing field of ‘primitive recursive’ mathematics. The subject has many different aspects. The main motivation of this framework is to understand the role of unbounded search in computable mathematics: either eliminate it when possible, or prove that without the unbounded search the result fails. Also, primitive recursion serves as a ‘bridge’ between the more abstract Turing computable mathematics and the perhaps more applicable polynomial-time and automatic algebra and analysis.

Over that past several years, investigations into this direction have uncovered many deep technical issues and results that were completely ‘invisible’ in the more general Turing computable algebra, analysis, and infinite combinatorics. Some recent results of this sort simply have no direct analogy in computable structure theory. In my talk I will emphasise those results and research directions in primitive recursive mathematics that either lead to counter-intuitive results or give new insights into other branches of effective mathematics. In particular, connections with automatic structure theory and reverse mathematics will be mentioned.