

# PRIMITIVE RECURSIVE ORDERED FIELDS AND SOME APPLICATIONS

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In this joint work with Svetlana Selivanova we establish primitive recursive versions of some known facts about computable ordered fields of reals and computable reals and then apply them to some problems in linear algebra and analysis. In particular, we find a partial primitive recursive analogue of Ershov-Madison's theorem about real closures of computable ordered fields, relate the corresponding fields to the primitive recursive reals, give sufficient conditions for primitive recursive root-finding, computing normal forms of matrices, and computing solution operators of some linear systems of PDE.

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