Reversal-Bounded Counter Machines⋆

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The class of reversal-bounded counter machines has been introduced and studied in [2], partly inspired by similar restrictions on multistack machines [1]. Every reachability set of an initialized reversal-bounded counter machine is a Presburger set, which is shown in [2]. The notion of reversal-boundedness from [2] has been also relaxed, for example by allowing a free counter or by counting the reversals only above a given bound. In both cases, semilinearity of the reachability sets is still preserved. In this talk, we present a selection of results about the verification of counter machines when the number of reversals is bounded, from reachability problems to model-checking problems with temporal logics passing via reversal-boundedness detection in VASS.

References

1. B. S. Baker and R. V. Book. Reversal-bounded multipushdown machines. *JCSS*, 8(3):315–332, 1974.
2. O. Ibarra. Reversal-bounded multicounter machines and their decision problems. *JACM*, 25(1):116–133, 1978.