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The power of priority channel systems. (English) Zbl 1448.68341
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Summary: We introduce Priority Channel Systems, a new class of channel systems where messages carry a numeric priority and where higher-priority messages can supersede lower-priority messages preceding them in the fifo communication buffers. The decidability of safety and inevitability properties is shown via the introduction of a *priority embedding*, a well-quasi-ordering that has not previously been used in well-structured systems. We then show how Priority Channel Systems can compute Fast-Growing functions and prove that the aforementioned verification problems are $\mathbf{F}_{\varepsilon_0}$ -complete.

MSC:

68Q85 Models and methods for concurrent and distributed computing (process algebras, bisimulation, transition nets, etc.) Cited in 8 Documents

Keywords:

well-quasi-order; well-structured transition systems; fast-growing complexity

Full Text: [DOI](#)