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Timing and causality in process algebra. (English. English summary)

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This paper presents an interesting timed process algebra formalism. Each action is supposed to have a fixed duration and the occurrences of actions are associated with intervals of time corresponding to the periods the actions are active. The point of view taken in the paper is to consider local clocks for parallel processes. In this way inconsistent or ill-timed traces may occur, and therefore the concurrency information is captured purely through timing. On the other hand, the advantages of the classical interleaving approach are preserved.

The authors present the motivation for their calculus in full detail, give some results and present an example of using the theory for the specification of a remote data-gatherer protocol. From the given results, we mention an axiomatization for recursion-free processes under a timed branching bisimulation and the incomparability of this equivalence with weak versions of causal bisimulation equivalence, location equivalence, and ST-bisimulation equivalence.

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