

A Quantitative Spectrum for Nondeterministic Probabilistic Processes

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Abstract

We propose original notions of behavioral (hemi)metrics capturing the ready simulation, simulation, (decorated) trace and testing semantics for processes with nondeterminism and probability. We study the relations among them and also the bisimilarity metric and we compare all these metrics with respect to their distinguishing power thus obtaining the first *spectrum* of behavioral metrics on processes in the PTS model partially ordered by the relation ‘*makes processes farther than*’. Further, we derive an analogous *spectrum* on the probabilistic equivalences and preorders constituting the kernels of these metrics, which can be in turn partially ordered by the relation ‘*makes strictly less identifications than*’.