998-60-144   **Mogens Bladt*** (`bladt@sigma.iimas.unam.mx`), Mogens Bladt, IIMAS-UNAM, A.P. 20-726, 01000 Mexico, D.F., Mexico. *Matrix-exponential distributions: calculus and interpretations via flows.*

By considering randomly stopped deterministic flow models, we develop an intuitively appealing way to generate probability distributions with rational Laplace-Stieltjes transforms on $[0, \infty)$. That approach includes and generalizes the formalism of PH-distributions. That generalization results in the class of matrix-exponential probability distributions. To illustrate the novel way of thinking that is required to use these in stochastic models, we retrace the derivations of some results from matrix–exponential renewal theory and prove a new extension of a result from risk theory. Essentially the flow models allows for keeping track of the dynamics of a mechanism that generates matrix–exponential distributions in a similar way to the probabilistic arguments used for phase-type distributions involving transition rates. (Received February 23, 2004)