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**Henri Schurz\*** ([hschurz@math.siu.edu](mailto:hschurz@math.siu.edu)), Southern Illinois University, Department of Mathematics, 1245 Lincoln Drive, Carbondale, IL 62901. *Stochastic Liénard Oscillators*.

This talk focusses on qualitative aspects of nonlinear stochastic differential equations governed by Liénard oscillators perturbed by Markovian-type noise. This class of oscillators contains the well-known examples of Van der Pol, Duffing, damped harmonic and nonlinear pendulum oscillations. At first, we prove existence of Markovian, unique, continuous, strong solutions with certain  $p$ -th moment bounds. Second, asymptotic stability along functionals is discussed. The analysis is based on the efficient construction of Lyapunov-functionals, Dynkin formula, well-known invariance and comparison principles. Finally, some nontrivial examples are given and a new stability condition of integral type to match the interaction of damping and restoring forces is found. If time permits we shall discuss related numerical analysis.

This work extends some of the analytic results of T.A. Burton in both deterministic and stochastic case. (Received September 28, 2005)