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rod freed* (raf12@cox.net), 25832 empresa, mission viejo, CA 92691. *Stability of Nonlinear Differential Equations.*

Nonlinear differential equations which are disturbed by random factors are used to model many situations in the physical sciences. And in many cases, we cannot know the exact form of the nonlinear functions which comprise the system. None the less, it is important to know whether or not our system is stable. We prove that the asymptotic probability distribution of the nonparametric kernel estimates of the derivatives of the nonlinear functions can be used to determine "how confident we can be" that the system of nonlinear differential equations is stable, even when we don't know the exact functional form of this system. (Received March 01, 2009)