On the practical $h-$stability of nonlinear systems of differential equations

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Mots-clés : mots clefs.

In this paper, we present a new type of stability for nonlinear systems of differential equations called practical $h-$stability. Necessary and sufficient conditions for practical $h-$stability are given using the Lyapunov theory. Our original results generalize well-known fundamental results: practical exponential stability, practical asymptotic stability and practical stability for nonlinear time-varying systems. In addition, these results are used to study the practical $h-$stability of two important classes of nonlinear systems, namely perturbed and cascaded systems. The last part is devoted to the study of the problem called problem of practical $h-$stabilization for certain classes of nonlinear systems.

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