



Stability of Dynamical Systems in Metric Space

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Abstract: In the paper a new approach is developed for stability analysis of motions of dynamical systems defined on metric space using matrix-valued preserving mappings. These results are applicable to a much larger class of systems than existing results, including dynamical systems that cannot be determined by the usual classical equations and inequalities. We apply our results in the stability analysis of hybrid systems in general and two-component hybrid systems.

Keywords: *Dynamical system; metric space; hybrid system; asymptotic stability; stability matrix-valued preserving mapping.*

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