

Conditions for robust stability of sampled-data systems with non-uniform sampling patterns and structural uncertainties are derived. The problem is tackled under the integral quadratic constraint (IQC) framework, where the “aperiodic sampling operation” is modelled by an “delay-integration” operator. Characterization based on integral quadratic constraints (IQC) is identified for this operator and the IQC theory is applied to derive convex stability criteria. Compared to the dominating Lyapunov approach where the candidate Lyapunov-Krasovskii functionals or looped functionals need to be tailored for the systems under consideration and therefore the stability conditions need to be re-derived whenever additional uncertainties are considered, the proposed approach has the advantage of avoiding such endeavor. Numerical examples are given to illustrate this main point and effectiveness of the proposed approach.