

1056-34-720

Dmitry Altshuller* (altshuller@ieee.org), Crane Aerospace & Electronics, 3000 Winona Ave, Burbank, CA 91510. *Frequency-Domain Criteria for Robust Stability for a Class of Linear Time-Periodic Systems.*

The paper considers the problem of robust stability of a linear system

$$x'(t) = Ax(t) + P(t)x(t), \tag{1}$$

where $x(t) \in \mathbb{R}^m$ and the matrix $P(t)$ is a direct product of a constant and a time-periodic vector.

Robust stability means that for all solutions $x(t)$ of (1), $x(\cdot) \in L_2(0; \infty)$ and, furthermore, there exists a constant λ , same for all solutions, such that $\|x(\cdot)\| \leq \lambda \|e^{At}x(0)\|$, with the double bars denoting the usual Euclidean norm in $L^2[0; +\infty]$.

The main result is given in terms of the frequency response of the constant part, which makes it applicable to cases when matrix $P(t)$ contains uncertainty. It is then used to derive simple stability criteria for some special cases, including the Hill's and Mathieu's equations. Comparison with classical results concludes the paper. (Received September 22, 2009)