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# Harmonic robust control for periodic systems

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## Résumé

Linear time-periodic (LTP) systems can describe a wide range of dynamics. To stabilize such systems, differential Lyapunov or Riccati equations can be solved. However, the difficulties associated with solving these equations suggest that an alternative method would be preferable. We exploit the equivalence between LTP and infinite-dimensional harmonic LTI systems to provide LMI that do not depend on time. This approach allows to solve LQR, H<sub>2</sub> and H<sub>∞</sub> control problems as long as the truncation of the harmonic model is consistent. If the model of the system is uncertain, similar LMI can be solved to guarantee robustness of the feedback.

**Mots-Clés:** LTP systems, Robust control, Linear matrix inequalities

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