Research

Colloquium

LQG optimal control via partial solution of Riccati equations

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摘　要：

For the LQG optimal control of time-invariant systems, the optimal control $F = -R^{-1}B^{\top}X \in \mathbb{R}^{m\times n}$ has been obtain via the symmetric solution $X \in \mathbb{R}^{n\times n}$ of the algebraic (differential or difference) equation for infinite (finite) time horizon. People have long been wandering about the waste of resource in such an approach, with the vast difference in the degrees of freedom in F and X, respectively nm and $n(n+1)/2$, especially for large-scale problems when $m \ll n$. In this talk, we shall present a possible approach, based on the Kalman decomposition, of obtaining F without solving the corresponding X fully, under sensible assumptions.