

[Åström, K. J.](#); [Zhao-Ying, Z.](#)

A linear quadratic Gaussian self-tuner. (English) Zbl 0572.93045

[Ric. Autom.](#) 13, 106-122 (1982).

The paper describes a self-tuning regulator for single-input single-output systems based on linear quadratic Gaussian (LQG) design and recursive estimation. The design problem is solved using spectral factorization and solution of a linear polynomial equation. The parameter estimation is based on extended least squares. The regulator has been implemented on a micro computer DEC LSI 11/03. The implementation admits interactive experimentation with operator communication via an ordinary terminal. All programming is done in the Pascal language. Applications to an analog computer simulation of ship steering and control of a laboratory process for concentration control are given.

MSC:

- [93C40](#) Adaptive control/observation systems
- [93E10](#) Estimation and detection in stochastic control theory
- [93E25](#) Computational methods in stochastic control (MSC2010)
- [11D09](#) Quadratic and bilinear Diophantine equations
- [62L12](#) Sequential estimation
- [93E20](#) Optimal stochastic control
- [65L05](#) Numerical methods for initial value problems involving ordinary differential equations
- [68U99](#) Computing methodologies and applications

Cited in **3** Documents

Keywords:

[self-tuning regulator](#); [linear quadratic Gaussian](#); [design](#); [recursive estimation](#)