二次自伴矩阵多项式阵的特征值

徐跃良(1), 李治(2)

(1) 西南交通大学数学系, 成都 610031; (2) 西南交通大学电气工程学院, 成都 610031

摘要   系统地论证了二次自伴矩阵多项式特征值, 特征向量的性质. 给出了二次自伴矩阵多项式特征值与任一非零向量所对应的二次多项式根之间的大小关系; 精确地给出了二次自伴矩阵多项式是负定时参数的界; 简化了二次自伴矩阵多项式的符号特征是正(负) 的特征值对应特征向量间可以是线性无关等定理的证明.

关键词   自伴矩阵多项式, 特征值, 特征向量, 负定阵, 二次稳定.

分类号   93A99

Eigenvalues of Quadratic Self-Adjoint Martix Polynomial

Xu Yueliang (1), Li Zhi (2)

(1) Department of Mathematics, Southwest Jiao Tong University, Chengdu 610031;

(2) School of Electrical Engineering, Southwest Jiao Tong University, Chengdu 610031

Abstract Quadratic self-adjoint matrix polynomial\mbox{'}s properties were demonstrated in detail. The properties were about quadratic self-adjoint matrix polynomial\mbox{'}s eigenvalues and eigenvectors. Some relations were presented that are about the quadratic polynomial\mbox{'}s root corresponding to any no-zero vector and the quadratic self-adjoint matrix polynomial\mbox{'}s eigenvalue. ~The bound of parameter was given accurately that can ensure the quadratic self-adjoint matrix polynomial negative. The eigenvectors corresponding to the positive(or negative) sign characteristic can be linearly independent and some other theories were proofed with simpler ways than before.

Key words   Self-adjoint matrix polynomial   eigenvalue   eigenvector   negative definite   quadratically stable.

DOI:

通讯作者