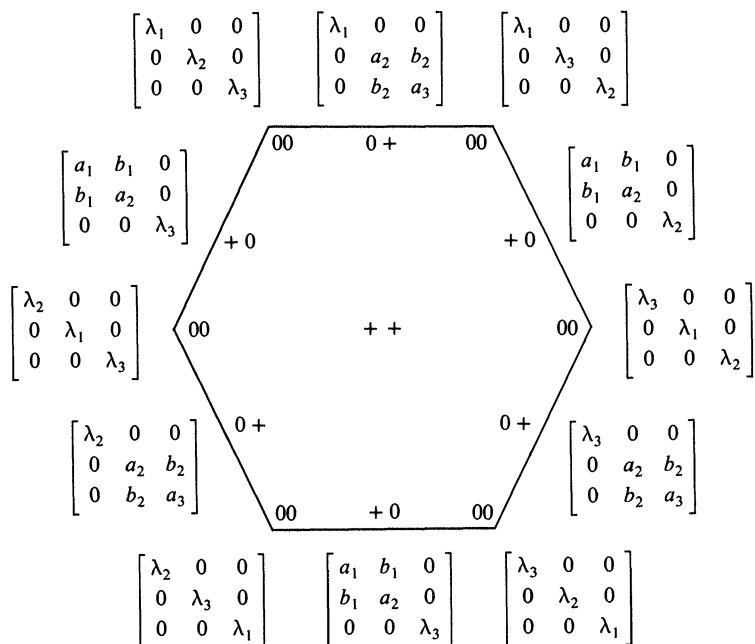


THE TOPOLOGY OF ISOSPECTRAL MANIFOLDS OF TRIDIAGONAL MATRICES

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§1. Introduction. In this paper, we study the topology of $M^n = M_{\lambda_1, \lambda_2, \dots, \lambda_n}$, the set of real, symmetric, tridiagonal $n \times n$ matrices with fixed eigenvalues $\lambda_1 > \lambda_2 > \dots > \lambda_n$. The usual techniques (inverse algorithms, integrable systems [Moser]) provide a description for the subset consisting of matrices with nonzero off-diagonal entries with prescribed signs—such a set, in the case of $n \times n$ matrices, is diffeomorphic to \mathbb{R}^{n-1} . We first study the boundary of this set (sections 3 and 4) and then, from a regular CW -decomposition, obtain some global information. In particular, M is a compact manifold, whose Euler characteristic is explicitly calculated (section 2), orientable (section 4) and whose universal covering is \mathbb{R}^{n-1} .

We now sketch the results and some techniques for the case $n = 3$. The set of



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