Hamiltonian and Symplectic Lanczos Processes

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Abstract: Large sparse Hamiltonian eigenvalue problems arise in a variety of contexts. These problems can be attacked directly, or they can first be transformed to problems having some related structure, such as symplectic or skew Hamiltonian. In the interest of efficiency, stability, and accuracy, such problems should be solved by methods that preserve the structure. This talk will discuss structure-preserving Krylov subspace methods for computing partial eigensystems of skew-Hamiltonian, Hamiltonian, and symplectic matrices.