

1077-81-870

Viswanath Ramakrishna* (vish@utdallas.edu), FO 35, 800 W. Campbell Rd, Richardson, TX 75080. *Remarks on Computing the Williamson Normal Form.*

The Williamson normal form is a canonical form for positive definite matrices, under conjugation by symplectic matrices. It plays an important role in classical and quantum mechanics, as well as in quantum optics and quantum information theory of continuous mode systems.

In this talk we will discuss an algorithmic approach to computing the Williamson normal form (in particular, to the calculation of the symplectic matrix which achieves the form). The method is based on combining the so-called Schur-Constantinescu parametrization of positive matrices together with a quaternion based approach to the Schur canonical form of anti-symmetric matrices. Simplifications which occur, when the positive definite matrix has additional structure (e.g., Toeplitz) will also be presented. (Received September 13, 2011)