# A T I L I M  U N I V E R S I T Y

## DEPARTMENT of MATHEMATICS

## SEMINAR ANNOUNCEMENT

*Speaker:* **Haydar ALICI**
(Middle East Technical University )

Computational efficiencies of the discrete (pseudospectral, collocation) and continuous (spectral, Rayleigh-Ritz, Galerkin) variable representations of the scaled Hermite-Weber basis in finding the energy eigenvalues of Schrödinger operators with several potential functions have been compared. It is well known that the so-called differentiation matrices are neither skew-symmetric nor symmetric in a pseudospectral formulation of a differential equation, unlike their Rayleigh-Ritz counterparts. In spite of this fact, it is shown here that the spectra of matrix Hamiltonians generated by Hermite collocation method may be determined by way of diagonalizing symmetric matrices. Furthermore, the symmetric matrix elements do not require the evaluation of Hermite polynomials at the grid points. Surprisingly, the present numerical results suggest that the convergence rates of collocation and Rayleigh-Ritz methods are entirely the same.

**DATE: March 12, 2008**

**TIME: 15:45**

**PLACE: FEF 223 (Seminar Room)**

All interested people are cordially invited. After the seminar, some cookies and soft drinks will be served.