

Meeting: 1000, Albuquerque, New Mexico, SS 1A, Special Session on Random Matrix Theory and Growth Processes

1000-82-136 **Estelle L Basor*** (ebasor@calpoly.edu), Mathematics Department, Cal Poly, San Luis Obispo, CA 93407. *Asymptotics of block Toeplitz determinants and the classical dimer model.*

Recent work of Fendley, Moessner, and Sondi shows that the study of a monomer-monomer correlation function for the classical dimer model on the triangular lattice can be reduced to the asymptotic behavior of determinants of certain large matrices that depend on a parameter t , $0 \leq t \leq 1$. The parameter t interpolates between the square lattice ($t = 0$) and the triangular lattice ($t = 1$). In this talk we will show how this determinant can be converted to the determinant of a block Toeplitz matrix. Szegő's Theorem is then applied to find the asymptotic expansion. One difficulty is that Szegő's Theorem for block matrices yields an answer in a rather abstract form. Fortunately, in this concrete case, a simpler expression can be found, and this computation is of independent interest. This work is joint with Torsten Ehrhardt. (Received August 22, 2004)