1158-30-124 **Jack Quoc-Viet Luong*** (jackaham_luongcoln@mail.fresnostate.edu), 5245 North Backer Avenue M/S, Fresno, CA 93740, and **Khang Tran**. *Zeros of polynomials generated by the number of rook paths.*

Bivariate recurrence relations are of interest due to their application in various combinatorial problems. For example, they can be used to count the number of rook paths from one corner of an infinite chessboard to another corner. In this talk, we study a table of polynomials obtained from the bivariate recurrence relation $H_{m,n}+H_{m-1,n}+H_{m,n-1}+zH_{m-1,n-1}=0$ with initial conditions $H_{0,0}=1, H_{-1,n}=H_{m,-1}=0$ for all natural numbers m and n. Equivalently, this table of polynomials is generated by $\sum_{m=0}^{\infty}\sum_{n=0}^{\infty}H_{m,n}t^m s^n=1/(1+s+t+zst)$. We show that all zeros of any polynomial in this table are real. We also consider the more general class of recurrence relations generated by $R(s,t)/(1+s+t+zst)$ where $R(s,t)$ is a polynomial in s and t. In particular, we give an upper bound that depends only on $R(s,t)$ on the number of complex zeros of $H_{m,n}$. (Received February 26, 2020)