1086-05-2998 **Jon Schneider***, MIT, Cambridge, MA. *Polynomial sequences of binomial-type occurring in graph theory.*

In this paper, we show that the solution to a large class of "tiling" problems is given by a polynomial sequence of binomial type. More specifically, we show that the number of ways to place a fixed set of polyominos on an n by n toroidal chessboard such that no two polyominos overlap is eventually a polynomial in n, and that certain sets of these polynomials satisfy binomial-type recurrences. We exhibit generalizations of this theorem to higher dimensions and other lattices. Finally, we apply the techniques developed in this paper to resolve an open question about the structure of coefficients of chromatic polynomials of certain grid graphs (namely that they also satisfy a binomial-type recurrence). (Received October 02, 2012)