

## Update on **Enumeration of Matchings**

James Propp

University of Massachusetts Lowell

June 25, 2009

PROBLEM 2. I wrote (on page 263) that “Ira Gessel proved this result independently using the nonintersecting lattice-paths method.” Gessel wrote to me later to explain that I should have written “Ira Gessel and Harald Helfgott”, as the work was joint. Also, Gessel and Helfgott did not use the nonintersecting lattice-paths method — the interesting feature of their paper is that one can represent the solutions of some of these problems as Hankel determinants rather than the binomial coefficient determinants that one obtains using nonintersecting lattice paths, and the Hankel determinants turn out to be easier to evaluate than the determinants of binomial coefficients.

PROBLEM 5. Greg Kuperberg’s paper “Kasteleyn cokernels” (*Electronic Journal of Combinatorics* **9** (2002), article R29; arXiv:math.CO/0108150) is relevant to topics discussed on page 265. In particular, Problem 5 is now an explicit conjecture.

PROBLEM 7. Ilse Fischer solved problem 7 in her article “Moments of inertia associated with the lozenge tilings of a hexagon” (*Seminaire Lotharingien de Combinatoire* B45f (2001)). In this article she shows that the moments of inertia along the vertical axis goes like 1, 18, 93, ... and not like 1, 20, 93, ... as claimed on page 267 of my article.

PROBLEM 22. Trevor Bass and Bridget Tenner have both found solutions to this problem. Tenner’s paper “Domino Tiling Congruence Modulo 4” will be appearing in *Graphs and Combinatorics*.

PROBLEM 31. Doug Lepro found a solution back in the late 90s but never published it. A similar proof was found more recently by Kyung-Won Hwang, Stephen Hartke and Naeem Sheikh.