Lattice Structure for Orientations of Finite Graphs

by James Propp

These are the illustrations for the 1994 version.

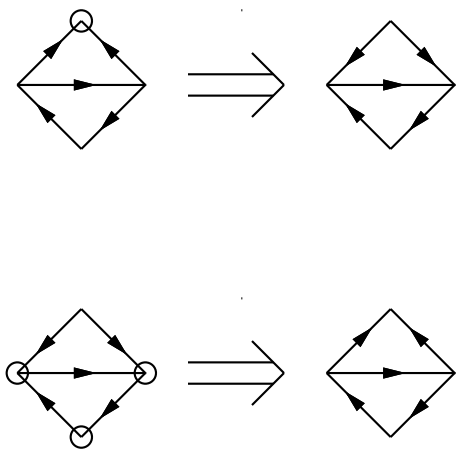


Figure 1. Two examples of pushing down.

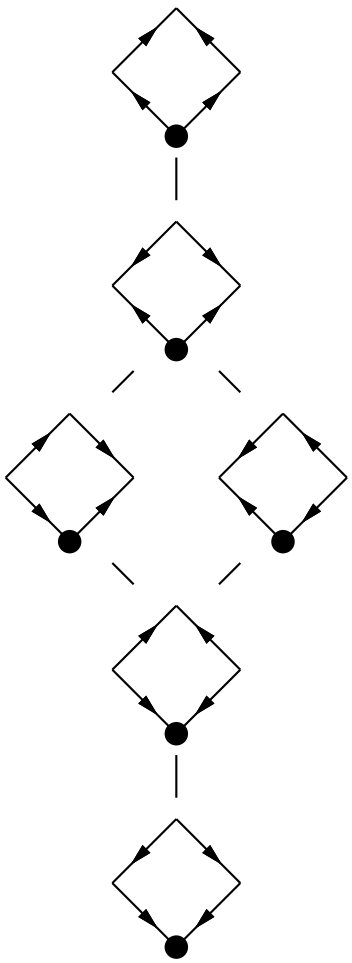


Figure 2. Orientations of a 4-cycle.

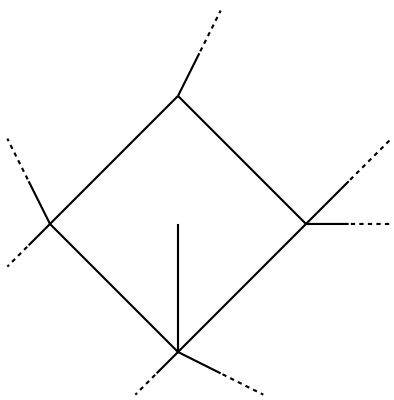


Figure 3. A six-sided face.

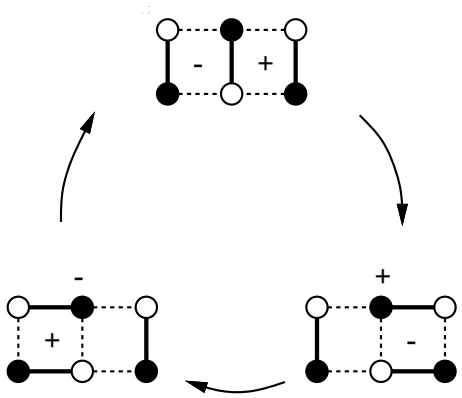


Figure 4. Twisting down 1-factors.

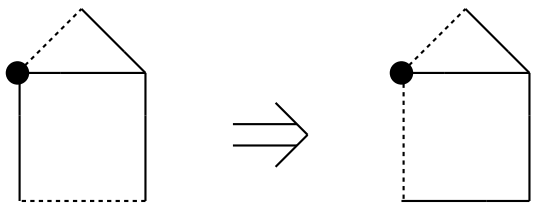
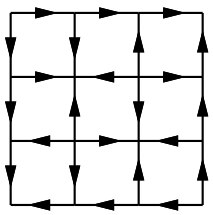


Figure 5. Swinging down an edge.



(a)

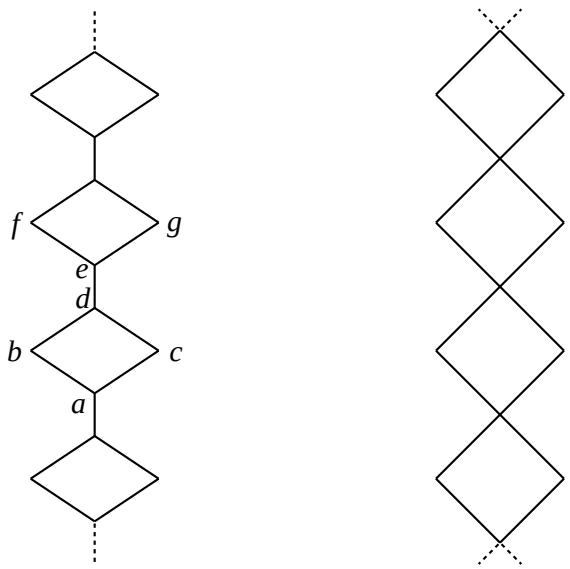
0	1/2	1	3/2
1/2	1	1/2	1
1	1/2	1	1/2
3/2	1	1/2	0

(b)

0	1	0
1	-1	1
0	1	0

(c)

Figure 6. Alternating sign matrices.



(a) **(b)**

Figure 7. An infinite lattice and its join-irreducibles.

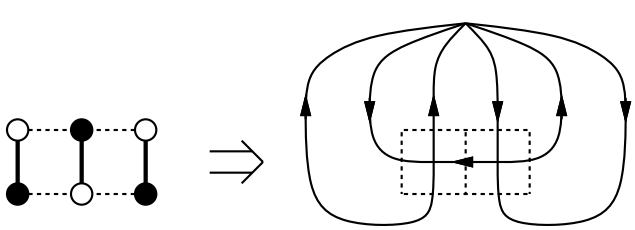


Figure 8. The standard orientation of the dual.

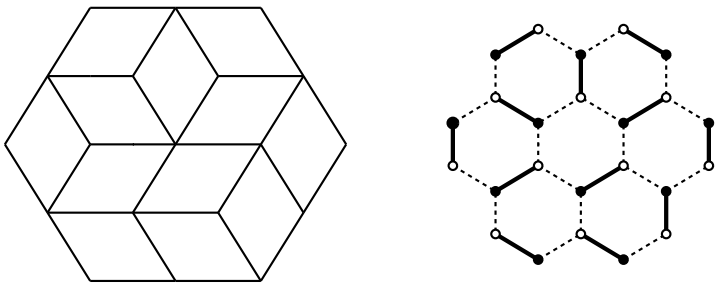


Figure 9. Lozenge tilings and matchings.

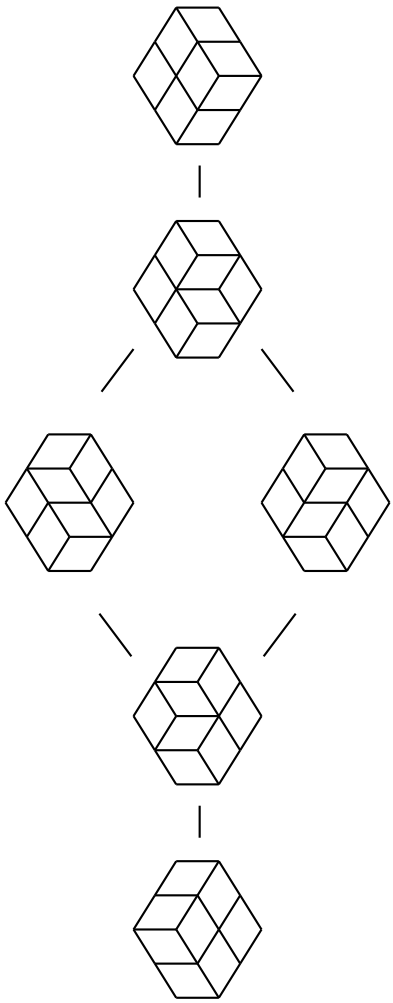


Figure 10. Partial ordering of lozenge tilings.

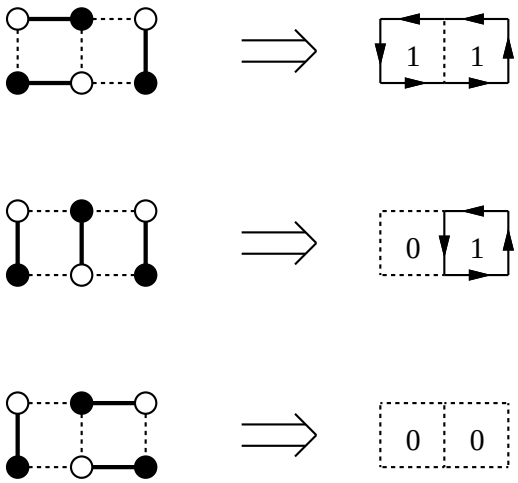


Figure 11. Contour lines for matchings.

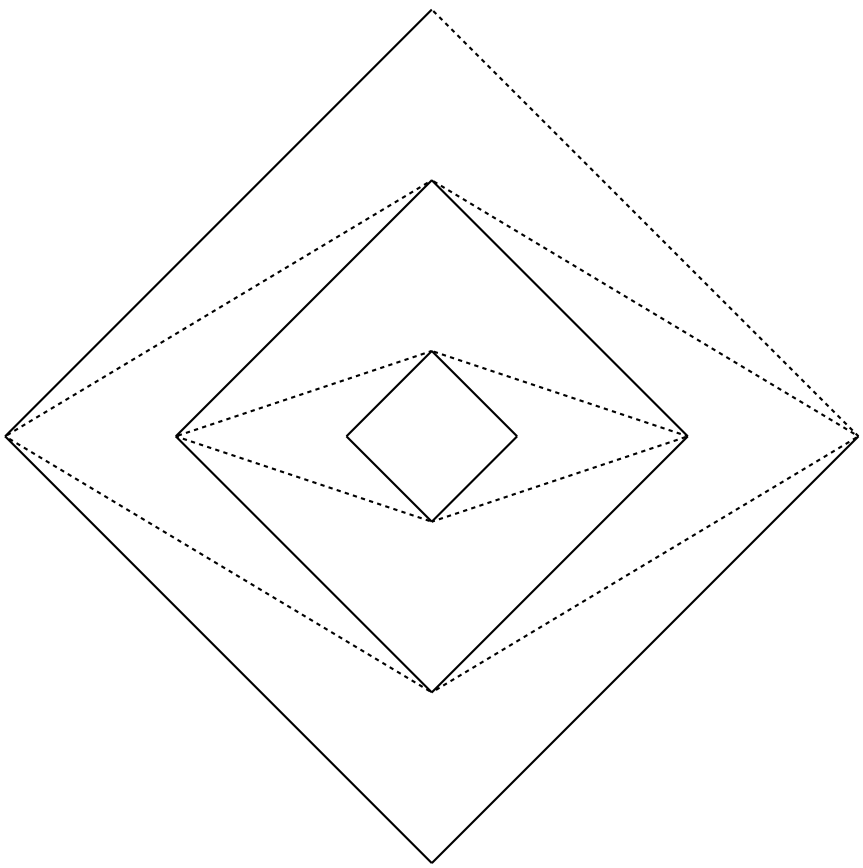
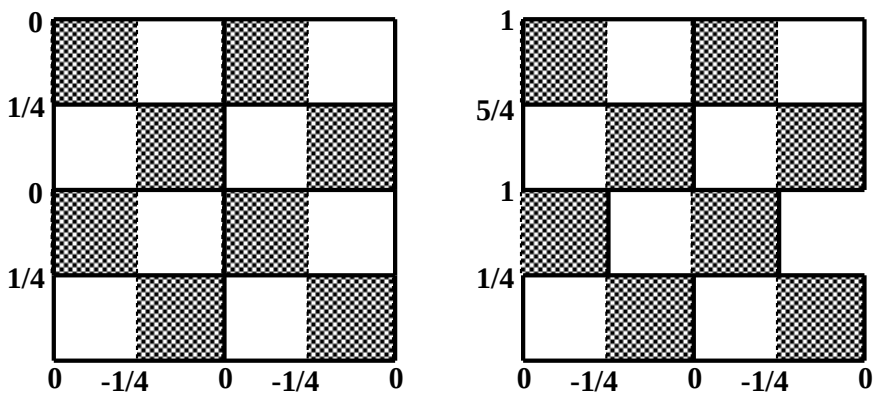


Figure 12. Jockusch’s example.



(a) **(b)**

Figure 13. Two non-cohomologous domino tilings.

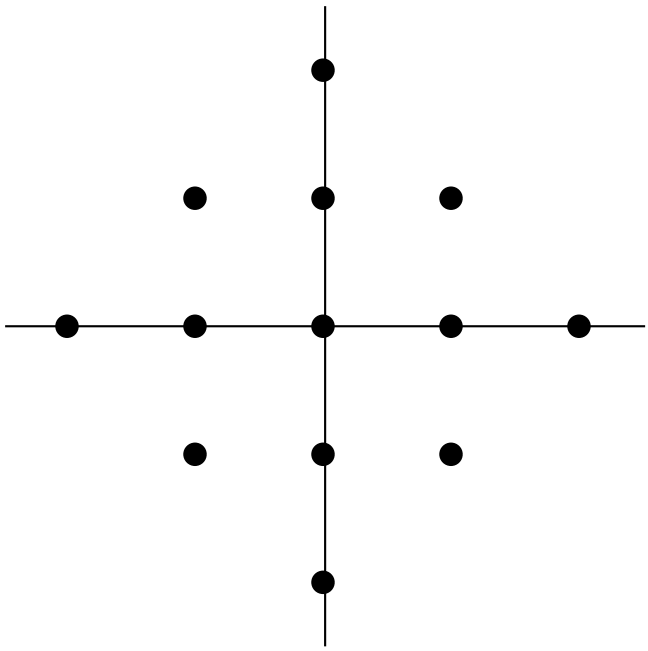
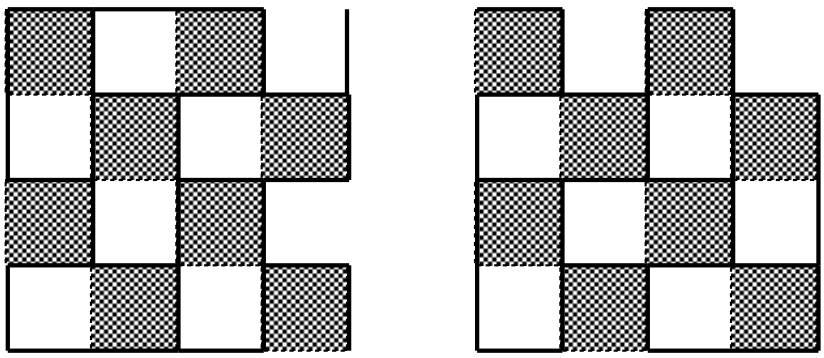


Figure 14. Achievable cohomologies for domino tilings of the 4-by-4 torus.



(a) **(b)**

Figure 15. Extremal cohomology.

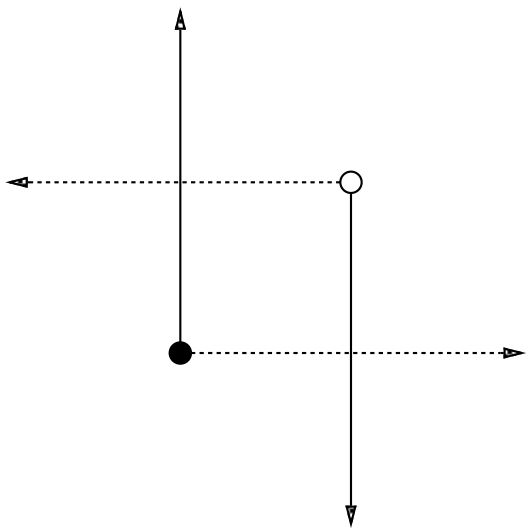
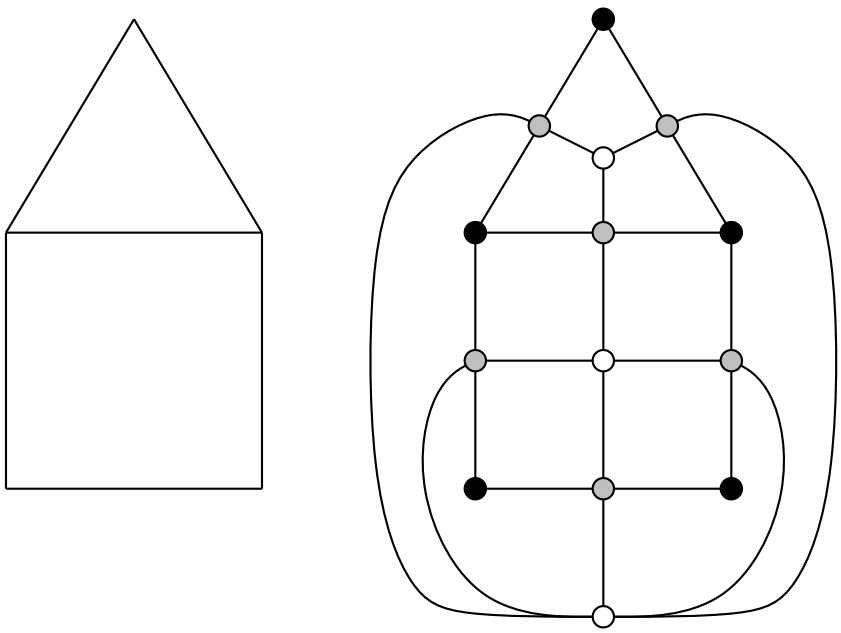
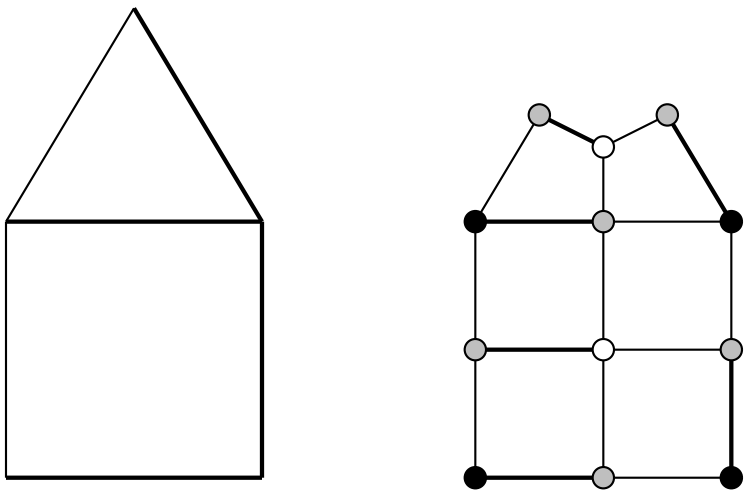


Figure 16. Swinging dual arborescences.



(a) **(b)**

Figure 17. The Hasse diagram graph.



(a) **(b)**

Figure 18. From spanning trees to matchings.

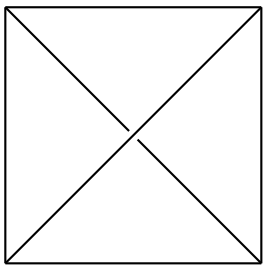


Figure 19. An outer-Hamiltonian graph.

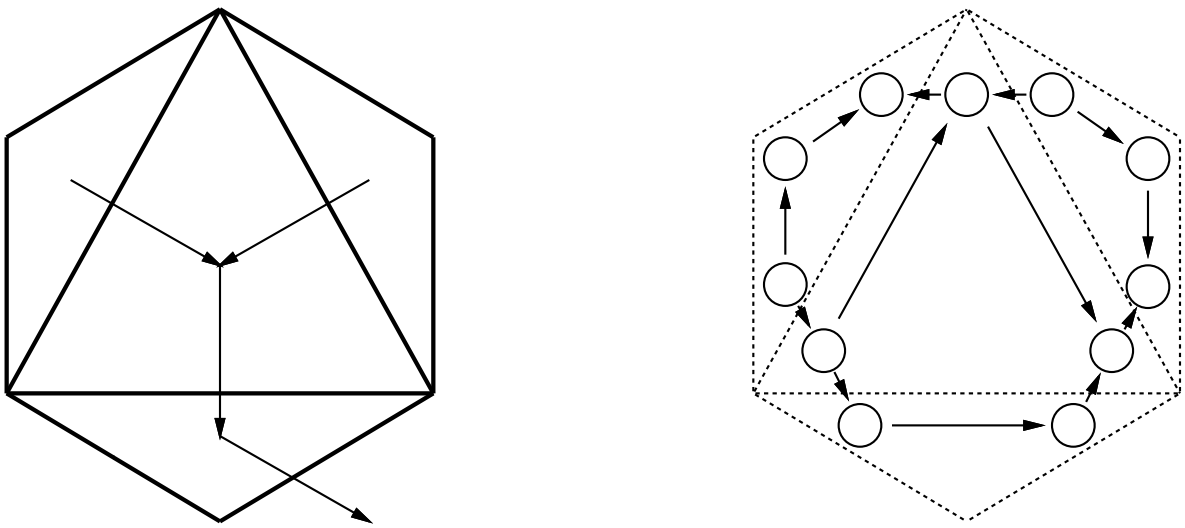


Figure 20. Ordering the angles of a planar outer-Hamiltonian graph.