(3) We believe that our approach to the Morton-Franks-Williams inequalities could be developed to yield more precise results on the cases of equality (which appear to be extremely frequent). For instance it is shown in [A], Proposition 7 that the first (respectively: third) inequality of Proposition 10 holds with equality if all vertices of $D$ have negative (respectively: positive) sign.

(4) Proposition 12 can be interpreted in terms of explicit matrix representations of Hecke algebras. The homfly polynomial of a braid diagram appears as the trace of a matrix indexed by its labellings. This matrix can be computed as a product consisting of one matrix for each crossing (which incorporates the interaction and writhe contributions) and a final diagonal matrix which assigns suitable weights to the various labellings.

(5) The known relationship of the Jones sequence of state models with solutions of the Yang-Baxter equation suggests that theoretical physics might provide an interpretation of the properties of the product operation for homfly polynomials. An algebraic generalization of this operation is given by V. G. Turaev in: Algebras of loops on surfaces, algebras of knots, and quantization, LOMI preprint E-10-88.

## REFERENCES

[1] ALEXANDER, J. W. Topological invariants of knots and links. *Trans. Am. Math. Soc. 30* (1928), 275-306.

[2] BAXTER, R. J. *Exactly solved models in statistical mechanics.* Academic Press, 1982.

[3] CONWAY, J. H. An enumeration of knots and links and some of their algebraic properties. *Computational problems in abstract algebra.* Pergamon Press, New York (1970), 329-358.

[4] FRANKS, J. and R. F. WILLIAMS. Braids and the Jones polynomial. *Trans. Am. Math. Soc. 303* (1987), 97-108.

[5] FREYD, P., D. YETTER, J. HOSTE, W. B. R. LICKORISH, K. MILLETT and A. OCNEANU. A new polynomial invariant of knots and links. *Bull. Am. Math. Soc. 12* (1985), 239-246.

[6] FREYD, P. and D. YETTER. A new invariant for knots and links. Preprint, University of Pennsylvania, 1984.

[7] DE LA HARPE, P., M. KERVAIRE and C. WEBER. On the Jones polynomial. *L'Enseignement Mathématique 32* (1986), 271-335.

[8] HOSTE, J. A polynomial invariant of knots and links. *Pacific Journal of Math. 124* (1986), 295-320.

[9] JAEGER, F. On Tutte polynomials and cycles of plane graphs. *J. Combinatorial Theory (B) 44* (1988), 127-146.

[10] —— Tutte polynomials and link polynomials. *Proc. Am. Math. Soc. 103* (1988), 647-654.

[11] JONES, V. F. R. A polynomial invariant for knots via Von Neumann algebras. *Bull. Am. Math. Soc. 12* (1985), 103-111.
[12] —— A new knot polynomial and Von Neumann algebras. *Notices of the Am. Math. Soc. 33* (1986), 219-225.
[13] —— Hecke algebra representations of braid groups and link polynomials. *Annals of Math. 126* (1987), 335-388.
[14] —— Notes on a talk in Atiyah's seminar, November 1986.
[15] KAUFFMAN, L. H. The Conway polynomial. *Topology 20* (1981), 101-108.
[16] —— *Formal knot theory*. Princeton university press, Mathematical notes 30, 1983.
[17] —— State models and the Jones polynomial. *Topology 26* (1987), 395-407.
[18] —— New invariants in the theory of knots. *Amer. Math. Monthly 95 n° 3* (1988), 195-242.
[19] —— An invariant of regular isotopy. *Trans. AMS*. To appear.
[20] —— State models for knot polynomials — an introduction. *Proceedings of the 1987 Winter Meeting of the Brasilian Mathematical Society*.
[21] LICKORISH, W. B. R. and K. MILLETT. A polynomial invariant of oriented links. *Topology 26* (1987), 107-141.
[22] MORTON, H. R. Seifert circles and knot polynomials. *Math. Proc. Camb. Phil. Soc. 99* (1986), 107-109.
[23] MURAKAMI, H. A formula for the two-variable link polynomial. *Topology 26* (1987), 409-412.
[24] MURASUGI, K. Jones polynomials and classical conjectures in knot theory. *Topology 26* (1987), 187-194.
[25] OCNEANU, A. A polynomial invariant for knots: a combinatorial and an algebraic approach. Preprint, University of California, Berkeley, 1985.
[26] PRZYTYCKI, J. H. and P. TRACZYK. Invariants of links of Conway type. *Kobe J. Math. 4* (1987), 115-139.
[27] THISTLETHWAITE, M. A spanning tree expansion of the Jones polynomial. *Topology 26* (1987), 297-309.
[28] TURAEV, V. G. The Yang-Baxter equation and invariants of links. *Invent. Math. 92* (1988), 527-553.
[29] TUTTE, W. T. A ring in Graph Theory. *Proc. Cambridge Phil. Soc. 43* (1947), 26-40.
[30] —— A contribution to the theory of chromatic polynomials. *Canad. J. Math. 6* (1954), 80-91.
[31] VOGEL, P. Représentations et traces des algèbres de Hecke, polynôme de Jones-Conway. *L'Enseignement Mathématique 34* (1988), 333-356.

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