Splitting number of links

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The talk is based on the joint work with Stefan Friedl and Mark Powell.

Session: Knot Theory

The framization is a mechanism designed by Juyumaya and Lambropoulou and consists of a generalization of a knot algebra via the addition of framing generators. In this way we obtain a new algebra which is related to framed knots. More precisely, the framization procedure can roughly be regarded as the procedure of adding framing generators to the generating set of a knot algebra, of defining interacting relations between the framing generators and the original generators of the algebra and of applying framing on the original defining relations of the algebra. The resulting framed relations should be topologically consistent. The most difficult problem in this procedure is to apply the framization on the relations of polynomial type.

In this talk we will present three framizations of the Temperley-Lieb algebra as a quotient of the Yokonuma-Hecke algebra over appropriate two-sided ideals. The quotient algebras that arise are: the *Framization of the Temperley-Lieb algebra* $FTL_{d,n}(u)$, the *Yokonuma-Temperley-Lieb algebra* $YTL_{d,n}(u)$ and the *Complex Reflection Temperley-Lieb algebra* $CTL_{d,n}(u)$. From these we choose the algebra $FTL_{d,n}(u)$ as the analogue of the Temperley-Lieb algebra in the context of framing, since it reflects the construction of a "framed Jones Polynomial" in the most natural way.

References

[1] J. S. Birman, *New point of view in knot theory*, Bull. Amer. Math. Soc.(N.S.) 28, 1993, 253–287.

[2] K. Kawamuro *Khovanov-Rozansky homology and the braid index*, Proc. Amer. Math. Soc., 137, 2009, 2459–2469.

[3] L. Paris, L. Rabenda B., *Singular Hecke algebras, Markov traces, and HOMFLY-type invariants*, arXiv [math/GT]: 0707.0400v1.

[4] L. H. Kauffman, P. Vogel, *Link polynomials and a graphical calculus*, J. Knot Theory Ramification 1, 1992, 59–104.