
double of $k[x]$

1 message

Roland Mathematics <roland.mathematics@gmail.com>

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To: Dror Bar-Natan <dror.barnatan@gmail.com>

Dear Dror,

It seems to me we overlooked something rather simple:

The universal invariant corresponding to the Drinfeld double of the polynomial algebra gives the linking matrix of tangles via the R-matrix $\exp(x y)$ The twisted double, twisting by the homology representation, should give $1/\text{Alexander}$.

Unlike the exterior algebra case where we get Alexander, perturbing the symmetric algebra construction seems doable. This must be the one-step procedure that we've been looking for.

The twist is by the automorphism $\alpha(x) = t x$ and $\alpha(y) = 1/t$ All Gaussian techniques we developed and implemented still apply because α has generating function $\exp(t x + y/t)$. The bracket in the double comes out to be something like $[x, y] = 1 - t$. A relation to the equivariant linking number seems near too.

For more on the twisted double construction see my paper with Daniel,

<https://robert.perso.math.cnrs.fr/kos.html>

Best,

Roland