DoPeGDO on 190403

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Dror Bar-Natan: Talks: DaNang-1905:

Everything around sl^{ϵ}_{2+} is **DoPeGDO**. So what?

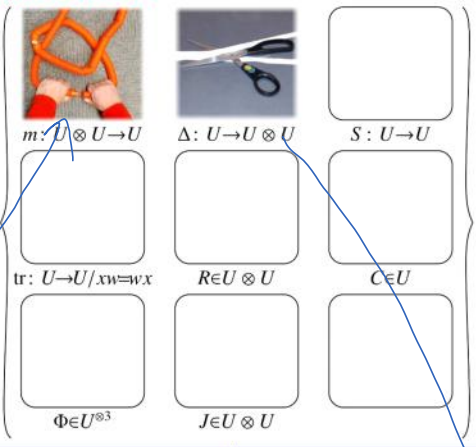
Thanks for inviting me to Da Nang!
ωεβ:=http://drorbn.net/v19/
More at ωεβ/talks

Continues Rozansky [Ro1, Ro2, Ro3] and Overbay [Ov], joint with van der Veen.

Abstract. I'll explain what "everything around" means: classical and quantum m, Δ, S, tr, R, C, and θ, as well as P, Φ, J, $\mathbb{D}$, and more, and all of their compositions. What **DoPeGDO** means: the category of Docile Perturbed Gaussian Differential Operators. And what sl^{ϵ}_{2+} means: a solvable approximation of the semi-simple Lie algebra sl_2.

Knot theorists should rejoice because all this leads to very powerful and well-behaved poly-time-computable knot invariants. Quantum algebraists should rejoice because it's a realistic playground for testing complicated equations and theories.

In Pictures...



Series always converge!

Conventions. For a set A, $z_A := \{z_i\}_{i\in A}$ and $\zeta_A := \{z_i^* = \zeta_i\}_{i\in A}$. Always, at least one of $\{z_i, \zeta_i\}$ is "heavy".

DoPeGDO: A category with objects finite sets and $\mathrm{mor}(A\to B)$:

$$\left\{F = \omega\exp\left(Q + \sum_{k\ge 1}\epsilon^k P_k\right)\right\}$$

• ω is a scalar. • Q is a quadratic in $\zeta_A \cup z_B$. • The P_k are "perturbation polynomials"; the "heavy degree" of P_k is $\le k+1$. • Compositions:

$$F/\!/G = G\circ F := \left(G|_{\zeta_i\to\partial_{z_i}}F\right)_{z_i=0}.$$

Cool! $(V^*)^{\otimes A}\otimes V^{\otimes B}$ explodes; the ranks of quadratics and fixed-degree polynomials grow slowly!

* white background
* bigger gap between lands

* white background
* Coloured land.
* More land less scissors.