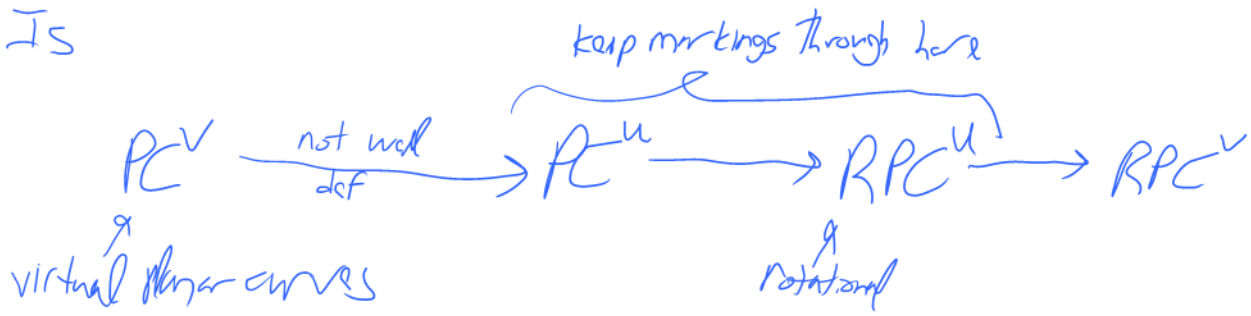


Q. Is the rotational info in some sense F.T. in the crossing info?

Q. Is



well defined? No! can't avoid spurious

lll

Tag: DPG

Title: Everything Around $\mathfrak{sl}_2+\hbar$ is DoPeGDO. Hurray!

Abstract: We construct $\mathfrak{sl}_2+\hbar$, a certain "lossless approximation" of \mathfrak{sl}_2 , and show that "everything that matters" around its universal enveloping algebra and around its quantization, namely the product, the co-product, the R-matrix, and other essential ingredients can be described in terms of a certain category DoPeGDO of "Docile Perturbed Gaussian Differential Operators".

Those essential ingredients are what one needs in order to construct powerful knot invariants with good algebraic properties. Also, as we show, DoPeGDO is "easy" in the sense of computational complexity. Hence we get (and implement and compute) powerful poly-time-computable knot invariants with favourable algebraic properties.

Similar constructions ought to exist for all semi-simple Lie algebras, but we do not pursue this here.

1. Plan of the paper. There is little we want to say by means of an introduction beyond what we said already in the abstract (so please read the abstract again). Instead, here's the plan:

In section 2,

In section 3,

(sections 2 and 3 commute and can be read in either order)

2. The Category DoPeGDO (along the lines of my FDA handouts).

3. $\mathfrak{sl}_2+\hbar$, CU, and QU.

4. Everything Around $\mathfrak{sl}_2+\hbar$ is DoPeGDO.

5. Tangles and knots and algebraic knot theory.

6. Odds and Ends.