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Yangians for Takiff Algebra and Spectral R matrix

Let $\mathfrak{g}$ be a Lie algebra and $\mathfrak{d} := T^*\mathfrak{g} = \mathfrak{g} \ltimes \mathfrak{g}^*$, which we call the Takiff algebra of $\mathfrak{g}$. In this talk, I will explain how one can construct a natural quantization of $U(\mathfrak{d}[t])$ as a Hopf algebra, which I will denote by $\mathcal{A}_\hbar(\mathfrak{d})$. This will be a Hopf algebra with an action of the translation operator T, and moreover possess a spectral R matrix $R(z)$, such that:

$$\tau_z \otimes 1(\Delta_\hbar^{op}) = R(z)(\tau_z \otimes 1\Delta_\hbar)R(z)^{-1},$$

where $\tau_z = e^{zT}$ and $R(z)$ satisfies spectral quantum Yang-Baxter equation. I will explain how this construction is inspired by the study of holomorphic topological twists of 4d $\mathcal{N} = 2$ theories, as well as the construction of Gautam-Toledano-Laredo-Wendlandt.