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Daniel Douglas* (dcdougla@usc.edu). *Classical and quantum traces coming from $SL_n(\mathbb{C})$ and $U_q(\mathfrak{sl}_n)$.* Preliminary report.

We discuss work in progress constructing a **quantum trace map** for SL_n . This is a kind of Reshetikhin-Turaev invariant for links in thickened surfaces, coming from an interaction between Teichmüller theory and quantum groups.

Let S be a surface with punctures. The skein algebra of S is a noncommutative algebra whose elements are classes $[L]$ represented by framed links L in $S \times [0, 1]$. The skein algebra is a quantization of the $SL_2(\mathbb{C})$ character variety of S , where the deformation depends on a complex parameter q . **Bonahon and Wong** constructed an injective algebra homomorphism from the skein algebra of S into a noncommutative algebra T , where T can be thought of as a quantum Teichmüller space of S . This map associates to a link L in $S \times [0, 1]$ a Laurent q -polynomial in noncommutative variables X_i , $i = 1, 2, \dots, \dim(\text{Teich}(S))$, which in the classical case $q = 1$ corresponds to the trace of monodromies of hyperbolic structures on S expressed in Thurston's shearing coordinates for Teichmüller space. More recently, **Fock and Goncharov** developed a higher Teichmüller theory, which should lead to a $SL_n(\mathbb{C})$ version of this invariant. (Received August 23, 2019)