March 19: Alex Chervov (IAS), "The center of $U_{crit}(\widehat{gl}_n)$ and the Langlands correspondence over $\mathbb{C}$." FOLLOWED BY DINNER.

The explicit construction of generators of the center of the universal enveloping algebra $U_{crit}(\widehat{gl}_n)$ will be presented. The main feature of the construction is that generators are combined in the generating expression $:\det(d/dz - L(z)):$, which is a differential operator in one auxiliary variable z.

One obtains a form of the local Langlands correspondence over $\mathbb{C}$ as follows. Via a version of Schur's lemma, a representation V of the $U_{crit}(\widehat{gl}_n)$ defines a character χ_V of the center $ZU_{crit}(\widehat{gl}_n)$.

Now the correspondence can be explicitly described:

$$V \text{ corresponds to } \chi(:\det(d/dz - L(z)):).$$

It relates the representations V of $U_{crit}(\widehat{gl}_n)$ and differential operators in one variable (GL_n-opers). If time permits, generalizations to quantum-super groups; relations with the Capelli identities; Knizhnik-Zamolodchikov equation and Bethe Ansatz for integrable systems will be discussed.

The talk will be based on `hep-th/0604128, arXiv:0711.2236`