

**A categorification of the boson-fermion correspondence via representations of  $\mathfrak{sl}(\infty)$**  We construct a realization of certain vertex operators acting on the Fock space by functors acting on the derived category of tensor  $\mathfrak{sl}(\infty)$ -modules. This realization gives a non-computational categorical proof for certain identities of vertex operators. This is a joint work with Igor Frenkel and Ivan Penkov.