1083-17-183 **Bojko Bakalov*** (bojko_bakalov@ncsu.edu) and **Todor Milanov** (todor.milanov@ipmu.jp).

$\mathcal{W}$-constraints for the total descendant potential of a simple singularity.

Simple singularities are classified by Dynkin diagrams of type ADE. Let $\mathfrak{g}$ be the corresponding finite-dimensional Lie algebra, and W its Weyl group. The set of $\mathfrak{g}$-invariants in the basic representation of the affine Kac–Moody algebra $\hat{\mathfrak{g}}$ is known as a $\mathcal{W}$-algebra and is a subalgebra of the Heisenberg vertex algebra $\mathcal{F}$. Using period integrals, we construct an analytic continuation of the twisted representation of $\mathcal{F}$. Our construction yields a global object, which may be called a W-twisted representation of $\mathcal{F}$. Our main result is that the total descendant potential of the singularity, introduced by Givental, is a highest weight vector for the $\mathcal{W}$-algebra. (Received August 27, 2012)