

Chiral homology of elliptic curves

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I will discuss results of an ongoing project (joint with Reimundo Heluani) on the chiral homology of elliptic curves with coefficients in conformal vertex algebras. We construct a flat connection on the first chiral homology over the moduli space, relate the nodal curve limit with the Hochschild homology of the Zhu algebra, and construct flat sections from self-extensions of modules. We find interesting links between these structures, Poisson homology of Poisson varieties, and classical number theoretic identities of Rogers-Ramanujan type (this last part joint work with George Andrews).