

Genus one corrections in two-matrix models,
 G -function of Frobenius manifolds and
Laplace determinants

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Abstract

Under assumption of existence of $1/N^2$ expansion in two-matrix models, we explicitly compute the $1/N^2$ correction to free energy. The answer is expressed in terms of Bergmann tau-function on Hurwitz spaces and is closely related to G -function of Frobenius manifolds associated to Hurwitz spaces and isomonodromic tau-function. Invariance of the answer with respect to the choice of projection of the spectral curve turns out to be a version of Alvarez formula for Laplace determinants for metrics with conical singularities. This is a joint work with B.Eynard and A.Kokotov.