Toplogical String theory and Jacobi forms

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We show that the partition function Z of the topological string on elliptically fibred Calabi-Yau manifolds has an all genus expansion in terms of Jacobi-forms, where the elliptic arguments is identified with the string coupling. This can be proven using on Witten's reformulation of the holomorphic anomaly equations as wave function equation and modular properties of elliptic fibrations that can be inferred from homological mirror symmetry. If the pole structure in the elliptic arguments is know the determination of Z becomes a finite problem, that in many cases is completly fixed by vanishing conditions of BPS invariants. The latter observation determines many theories e.g. the partition function for the E-string completly.