

Topological recursion of Eynard-Orantin and the Harmonic Oscillator

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We apply the Chekhov-Eynard-Orantin topological recursion to the curve corresponding to the quantum harmonic oscillator and demonstrate that the result is equivalent to the WKB wave function. We also show that using the multi-differentials obtained by the topological recursion from the harmonic oscillator curve, one generates naturally the so-called Poincaré polynomials associated with the orbifolds of the metric ribbon graphs.

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