

# Topological recursion and moduli spaces, a proof of the BKMP conjecture

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Topological recursion associates to any spectral curve  $S$ , an infinite double sequence  $W_{g,n}(S)$  of symmetric  $n$ -forms on  $S^n$ . We show that, for any  $S$ ,  $W_{g,n}(S)$  can be written as an integral of some cohomology class  $\Lambda_S$  in some moduli space  $\overline{M}_{g,n}^S$ . This formula generalizes in some sense the ELSV formula, with ELSV as the special case where  $S$  is the Lambert curve. This formula also provides an easy proof of Mirzakhani's recursion. Finally, starting from the mirror of a toric Calabi-Yau manifold  $X$  as spectral curve, we show that this formula allows to prove the BKMP conjecture: the  $W_{g,n}$ (mirror curve) are the Gromov-Witten invariants of  $X$ .

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