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Chern-Weil forms on Calabi-Yau moduli

We will first give a brief review of the geometry of CY moduli, including the result on the proof of the B-side of the BCOV conjecture (joint with Fang and Yoshikawa). Then we will prove that the integrals of the Chern-Weil forms on CY moduli are always rational numbers. This result follows from a more general one: the integrals of the Chern-Weil forms of the Hodge bundles on any coarse moduli spaces are rational numbers. We will also discuss the applications in string theory. The second part of the result is joint with M. Douglas.