The mod two cohomology of the moduli space of rank two stable bundles on a
surface and skew Schur polynomials
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Abstract. We compute cup product pairings in the integral cohomology ring of the
moduli space of rank two stable bundles with odd determinant over a Riemann sur-
face using methods of Zagier. The resulting formula is related to a generating function
for certain skew Schur polynomials. As an application, we compute the nilpotency de-
gree of a distinguished degree two generator in the mod two cohomology ring. We
then give descriptions of the mod two cohomology rings in low genus, and describe
the subrings invariant under the mapping class group action.