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Irwin Kra* (irwin@math.sunysb.edu), Dept of Math, SUNY, Stony Brook, NY 11794. *A pairing between quadratic differentials and free homotopy classes of closed curves.* Preliminary report.

Let S be a noded Riemann surface or orbifold of finite conformal type. We discuss a pairing $\langle c, \varphi \rangle$ between free homotopy classes of simple closed curves c on S (in particular, curves in a decomposition of S into a finite number of pairs of pants) and holomorphic quadratic differentials on S . As an application we study isomorphisms between spaces of holomorphic quadratic differentials on surfaces of finite type. (Received July 25, 2010)