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*On holomorphic  $k$ -differentials on open Riemann surfaces*

Let  $\Sigma$  be a hyperbolic Riemann surface, we study the spaces of integrable, square integrable and bounded holomorphic  $k$ -differentials on  $\Sigma - \Lambda$ , where  $\Lambda$  is a closed subset of  $\Sigma$ , and  $k > 1$  is an integer. The main result will provide a description of the kernel of the Poincaré series map.

This is joint work with T. Foth.