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**Dmitry Korotkin\*** ([korotkin@mathstat.concordia.ca](mailto:korotkin@mathstat.concordia.ca)), 1455 de Maisonneuve West, Montreal, Quebec H3G1M8, Canada. *Prym-Tyurin classes and tau-functions.*

In this paper we study the space of holomorphic  $n$ -differentials over Riemann surfaces of genus  $g$  for  $n > 1$ . We introduce a set of  $n$  vector bundles over this space, which we call Prym-Tyurin vector bundles. Corresponding determinant line bundles are called Prym-Tyurin line bundles. We define a set of  $n$  tau-functions on the space  $M$  and interpret them as holomorphic sections of tensor product of certain powers of Prym-Tyurin line bundles and tautological line bundle. This allows to express the first Chern classes of Prym-Tyurin line bundles (or Prym-Tyurin classes) via the boundary classes and the first Chern class of the tautological line bundle. The talk is based on joint work with Peter Zograf. (Received August 21, 2011)