1135-51-780   **Peter Buser**, **Eran Makover**, **Bjoern Muetzel*** (`bjorn.mutzel@gmail.com`) and **Robert Silhol**. *The Jacobian variety of Riemann surfaces with short simple closed geodesics.*

To any compact Riemann surface of genus $g \geq 2$ one may assign a principally polarized abelian variety of dimension g, the *Jacobian* of the Riemann surface. The Jacobian is a complex torus and we call a Gram matrix of the lattice of a Jacobian a *period Gram matrix*. We give explicit estimates for the entries of the period Gram matrix with respect to a suitable homology basis, if the Riemann surface contains a short simple closed geodesic γ and study this matrix, if the geodesic is pinched. If γ is separating, then the limit surface can be split into two surfaces with a cusp. If γ is non-separating, then the limit surface has two cusps. We furthermore show how certain harmonic forms of these limit surfaces extend to harmonic forms on the compact surfaces which we obtain by adding charts at the cusp points. As a consequence we obtain that certain sub-matrices of the period Gram matrices of the pinched surfaces converge to period Gram matrices of the compactified surfaces. (Received September 14, 2017)