

962-14-1009

**Mark van Hoeij\*** ([hoeij@math.fsu.edu](mailto:hoeij@math.fsu.edu)), dept. of Mathematics, Florida State University,  
Tallahassee, FL 32306. *Computing the period matrix of an algebraic curve.*

A black-box program for the explicit calculation of the Riemann matrix (the period matrix) of arbitrary compact connected Riemann surfaces is presented. All such Riemann surfaces are represented by the equation for a (possibly singular) plane algebraic curve. The method of calculation of the Riemann matrix is essentially its definition: we numerically integrate the holomorphic differentials of the Riemann surface over the cycles of a canonical basis of the homology of the Riemann surface. Both the holomorphic differentials and the canonical basis of the homology of the Riemann surface are obtained exactly through symbolic calculations. This program is included in Maple 6, as part of the `algcures` package. (Received October 01, 2000)