

1046-14-633

Yuri Lebedev* (ylebedev@math.fsu.edu), 5670 Emma Ln, Tallahassee, FL 32317, and **Mika Seppala**. *OpenMath Library for Computing on Riemann Surfaces*.

This paper reviews computational methods that will act as a tool in the research of Riemann surfaces, algebraic curves and Jacobian varieties. Since the categories of algebraic curves, Jacobian varieties and Riemann surfaces are equivalent we would like to examine this equivalence from a computational point of view. If a Riemann surface is given, we want to compute an equation representing it as a plane algebraic curve, and also to calculate a period matrix for it. On the other hand, we would like to be able to compute the uniformization for a given algebraic plane curve, or a Riemann surface corresponding to a given Jacobian variety. Computer program RieSurGen is introduced to accomplish this task that also offers a convenient way of defining Mobius transformations and Riemann surfaces for computations using quaternions and implements OpenMath as its communication protocol. OpenMath is discussed as an extensible standard for representing the semantics of mathematical objects. Finally, OpenMath's Content Dictionary for computing on Riemann surfaces is proposed. (Received September 09, 2008)