

1077-33-1046

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Quebec J1K 2R1. *Higher genus Weierstrass sigma-function.*

We propose a new way to generalise the Weierstrass sigma-function to higher genus Riemann surfaces. Our definition of the odd higher genus sigma-function is based on a generalization of the classical representation of the elliptic sigma-function via Jacobi theta-function. The odd higher genus sigma-function is associated with an odd spin line bundle on a given Riemann surface. We also define an even sigma-function corresponding to an arbitrary even spin structure on the surface. The proposed generalization of the sigma-function differs essentially from the existing ones; our way of generalization applies to any Riemann surface and naturally continues the approach of Felix Klein who generalized the sigma-function to the class of hyperelliptic curves. (Received September 15, 2011)