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Ernst Kani* (kani@mast.queensu.ca), Department of Mathematics and Statistics, Queen's University, Kingston, Ontario K7L 3N6, Canada. *Binary theta series and modular forms with complex multiplication.*

Let $\Theta(D)$ be the vector space generated by the theta series attached to the positive binary quadratic forms of discriminant D/t^2 , where t is some integer. The main aim of this talk is to show that $\Theta(D)$ equals the space of modular forms of weight 1 and of level $|D|$ which have complex multiplication (CM) by their Nebentypus character ψ_D (= the Legendre-Kronecker character). One key step here is to give (via the Deligne-Serre theory) a Galois-theoretic interpretation of newforms of weight 1 with complex multiplication. Another step consists of a careful analysis of how each such theta series can be expressed as a linear combination of the (extended) Atkin-Lehner basis for modular forms of weight one. (Received August 19, 2011)