

1061-81-51

**Razvan Gelca\*** ([rgelca@gmail.com](mailto:rgelca@gmail.com)), Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX 79410, and **Alejandro Uribe**, Department of Mathematics, University of Michigan, Ann Arbor, MI 48109. *From classical theta functions to topological quantum field theory.*

Abelian Chern-Simons theory relates classical theta functions to the linking number of knots. In this talk we will show that, by starting with the theory of classical theta functions in the representation theoretic viewpoint introduced by A. Weil, one can arrive at the skein modules of the linking number and at the corresponding topological quantum field theory, without the insights of quantum field theory. Classical theta functions and the action of the Heisenberg group on them are obtained via Weyl quantization in the holomorphic polarization, and the same quantization in the real polarization yields a combinatorial model that can be interpreted topologically. A close analysis of the discrete Fourier transform points to the existence of 3-manifold invariants. (Received March 25, 2010)