

**THE CHERN–SIMONS INVARIANTS  
OF CONE-MANIFOLDS WITH  
THE WHITEHEAD LINK SINGULAR SET***N. V. Abrosimov*

In the present article, we obtain some explicit integral formulas for the generalized Chern–Simons function  $I(W(\alpha, \beta))$  for Whitehead link cone-manifolds in the hyperbolic and spherical cases. We also give the Chern–Simons invariant for the Whitehead link orbifolds. We find a formula for the Chern–Simons invariant of  $n$ -fold coverings of the three-sphere branched over the Whitehead link.

*Key words and phrases:* Chern–Simons invariant, generalized Chern–Simons function, complex length, cone-manifold, orbifold, singular set, Whitehead link.

*Abrosimov Nikolaj Vladimirovich*  
Sobolev Institute of Mathematics,  
Novosibirsk, 630090 Russia.  
E-mail: abrosimov@math.nsc.ru

Received  
July 26, 2005

Translated into English:

*Siberian Advances in Mathematics*, V. 18, N 2, 77–85 (2008).