

1067-55-1437

**Muhammad N Ahmad\*** (naeem@math.ksu.edu), Department of Mathematics, Kansas State University, Mahattan, KS 66506. *Complex  $N$ -Spin Bordism of Semifree Circle Actions and Elliptic Genera.*

We give the complete geometric description of rational bordism groups of compact complex  $N$ -spin manifolds admitting semifree circle actions. We find a computable condition under which a conjecture of Höhn [1], describing the ideal  $I_*^{N,t}$  in rational complex  $N$ -spin bordism ring  $\Omega_*^{U,N} \otimes \mathbb{Q}$  generated by the bordism classes of complex  $N$ -spin manifolds admitting a semifree action of type  $t$  in terms of kernels of elliptic genera of level  $N$ , is true. We apply the bordism analysis developed in this work to verify the condition for several values of  $N$  and  $t$ , and thereby prove the conjecture of Höhn for those values of  $N$  and  $t$ . Moreover, the machinery developed here gives a mechanism to explore the ideal  $I_*^{N,t}$  for any given values of  $N$  and  $t$  in terms of kernels of elliptic genera of level  $N$ .

Refereneces:

[1] G. Höhn, *Komplex elliptische Geschlechter und  $S^1$ -äquivariante Kobordismustheorie*, Diplomarbeit, Bonn, 1991. (Received September 21, 2010)