

1023-57-512

Patrick M. Gilmer* (gilmer@math.lsu.edu). *Surgery of type- p and quantum invariants of 3-manifolds.*

Let p be an odd prime. Type- p surgery is a generalization of the notion of a/p surgery in a homology sphere. We show that the quantum $SO(3)$ invariant at a p th root of unity has a very simple surgery formula for type- p surgeries. We also generalize a theorem of Cochran and Melvin about the divisibility of quantum invariants of 3-manifolds with non-zero mod- p Betti number to the case where the 3-manifolds may contain colored fat graphs. We give a congruence for the quantum invariant of a Z_p -cyclic cover of a 3-manifold N which is also a quotient of a connected Z_{p^2} -cyclic cover of N . One of our main tools is a refinement of the result of Larsen and Wang that the associated $SL(2, Z)$ representation factors through the odd summand of the metaplectic representation of $SL(2, Z_p)$. (Received September 26, 2006)