

A question on the special values of Alexander polynomials which detect the smooth structure on spheres

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Abstract. J. Levine proved that the Kervaire invariant of a $(4m+1)$ -dimensional homotopy sphere was completely determined by the special value of the Alexander polynomial. This can be reformulated by using the Legendre (Jacobi) symbol based on the quadratic residue laws due to Gauss. Here is a question; “What is the algebraic essence of this fact from number theoretical viewpoint?”