

ABSTRACT

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We construct infinite families of knots with very special Jones polynomials: their coefficients are alternatingly 1 and -1 , starting and ending with 1. This extends the well known examples of the Jones polynomials of the knots 4_1 and 9_{42} . Their spans are equal to $2n^2 - 2$ and $n^2 + n - 2$ for any $n \geq 2$. Such polynomials have Mahler measure equal to 1 and they are products of cyclotomic polynomials. In particular, we show that infinitely many roots of unity occur as zeros of Jones polynomials. We also show that some infinite families of roots of unity cannot occur as zeros of Jones polynomials. We also study some properties of the constructed knots: they are non alternating (except for 4_1) and they are $(1, 1)$ -knots (hence prime).