Polynomial Knots and their Degree Sequence

Rama Mishra
Department of mathematics,
Indian Institute of technology-Delhi,
India

Abstract

A Polynomial Knot is a smooth embedding of R in R^3 defined by $t \mapsto (f(t), g(t), h(t))$ where $f(t)$, $g(t)$ and $h(t)$ are polynomials over the field of real numbers. They represent *non-compact knots* (introduced by Vassiliev). Two polynomial knots are said to be equivalent if there exists a one parameter family of polynomial embeddings of R in R^3 connecting one to the other. It has been proved that every non-compact knot is ambient isototopic to a polynomial knot. If a polynomial knot is given by an embedding $t \mapsto (f(t), g(t), h(t))$ where $\deg f(t) = l$, $\deg(g(t)) = m$ and $\deg(h(t)) = n$ then we say that (l, m, n) is a *degree sequence* of the knot K. Degree sequence for a given knot may not be unique. If a degree sequence (l, m, n) for a given knot is minimal in the sense of lexicographic ordering of N^3 then it is called the *minimal degree sequence* of that knot. In this talk we shall discuss degree sequences of knots and minimal degree sequence for some important class of knots.