



YMC 2006



Young Mathematicians Conference 2006

August 4th-6th at The Ohio State University.

CONSTRUCTING POLYNOMIAL KNOTS

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Abstract of Summary Talk: Shastri proved that every knot can be expressed as the image of a parametric function $t \mapsto (x(t), y(t), z(t))$, where x , y , and z are polynomials in t ; however, his proof gives no way of determining those polynomials for an arbitrary knot. Some work has been done to find low-degree polynomial parameterizations for specific knots. In this talk, we present a constructive proof of Shastri's theorem. Furthermore, we show how we can use the ideas of this proof together with linear programming to find $\hat{z}(t)$ of minimal degree such that the graph of $(x(t), y(t), \hat{z}(t))$ has the same knot type as that of $(x(t), y(t), z(t))$, assuming certain weak conditions on x and y . [WM06164735]

[Joint work with Susan Durst, Emily List, Charles Siegel, Katherine Toman]

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Received: July 20, 2006