1049-57-76 **Yuanan Diao*** (ydiao@uncc.edu), Department of Mathematics and Statistics, UNC Charlotte, 9201 University City Blvd, Charlotte, NC 28223, and **Ernst Claus**, **Attila Por** and **Uta Ziegler**.
The Ropelengths of Knots Are Almost Linear in Terms of Their Crossing Numbers: Part 1.

For a knot or link $\mathcal{K}$, let $L(\mathcal{K})$ be the ropelength of $\mathcal{K}$ and $Cr(\mathcal{K})$ be the crossing number of $\mathcal{K}$. Here we show that there exists a constant $a > 0$ such that $L(\mathcal{K}) \leq aCr(\mathcal{K})\ln^5(Cr(\mathcal{K}))$ for any $\mathcal{K}$, that is, the ropelength upper bound of any knot is almost linear in terms of its minimum crossing number and is a significant improvement over the best known upper bound established previously, where it was shown that $L(\mathcal{K}) \leq O((Cr(\mathcal{K})^{\frac{3}{2}}))$.

In this part, we lay out some basic graph theoretical results on subdividing a plane graph into sub plane graphs which are needed for constructing lattice knots of the given knot type with a length at most of order $O(n\ln^5(n))$ where n is the minimum crossing number of the given knot. (Received February 20, 2009)