Meeting: 1004, Bowling Green, Kentucky, SS 4A, Special Session on Knot Theory and Its Applications

1004-52-208   **Casey Mann*** (`cmann@uttyler.edu`), 3900 University Blvd, Tyler, TX 75799, and **Jennifer McLoud** (`jmcloud@uttyler.edu`), 3900 University Blvd, Tyler, TX 75799. *Lattice Knots and Cell Knots.* Preliminary report.

Lattice knots and their relationship to knots formed from the Voronoi cells of the lattice will be discussed. In particular, we prove that in the cubic lattice, the minimum number of cubes required to form a knot of a certain type is exactly twice the number of steps required to form the same type of knot in the lattice. We will present some conjectures pertaining to this relationship between edge knots and cell knots in other combinatorial types of lattices.

We will also discuss recent investigations into the minimal knotting number of lattice knots. The minimum knotting number in a lattice is the minimum number of steps required to form a knot in that lattice. It is known that 24 steps is the minimum required to form a knot in the cubic lattice. We will discuss our investigations into the minimum knotting number of the other four combinatorial types of lattices. (Received January 24, 2005)