1056-Z1-239 **Faun C. C. Doherty** (fdoherty@washjeff.edu), **Christian J. Miedel*** (miedelcj@washjeff.edu), **Peter A. Gentile** and **Jennifer M. Magee**. *A vertex ordering result for an application of DNA sequencing using tripartite unit probe interval graphs.*

Graph Theory has been proven a useful tool in the Physical Mapping problem which is to reconstruct the relative position of DNA fragments along the genome from pair wise overlap information. Some cloning techniques generate clones that are approximately the same length, and their overlap information can be modeled using unit probe interval graphs. A graph is a probe interval graph if its vertices can be partitioned into two sets, probes and nonprobes, with an interval assigned to each vertex so that vertices are adjacent if and only if their corresponding intervals intersect and at least one of the vertices is a probe. A unit probe interval graph has intervals of the same length. If one assumes that we start with a contiguous piece of DNA, then we can assume a canonical order exists on the vertices reflecting the real order of fragments. We investigate the situation in which we have three restriction enzymes cutting DNA into fragments of approximately the same size. We prove that with the exception of vertices occurring at the ends of the interval model, our resulting tripartite unit probe interval graph has a realizable consecutive ordering of the vertices if and only if it is connected, which would provide the ordering of the DNA fragments. (Received September 14, 2009)