Robert E.L. Aldred, Quili Li, Michael D. Plummer* (michael.d.plummer@vanderbilt.edu), Dong Ye and Heping Zhang. Matching Extension in Toroidal Quadrangulations: the 3-extendable Case.

A graph $G$ containing a perfect matching is said to be $m$-extendable if $m \leq (|V(G)| - 2)/2$ and for every matching $M$ in $G$ with $|M| = m$, there is a perfect matching $F$ in $G$ such that $M \subseteq F$. In an earlier paper, four of the present five authors characterized those quadrangulations of the torus which are 2-extendable. In this talk a characterization of those which are 3-extendable will be presented. Since no quadrangulation of the torus can be $m$-extendable for any $m \geq 4$, this completes the classification of $m$-extendable toroidal quadrangulations. Moreover, by a previous result of the third author, it then follows that we have therefore characterized all 3-extendable toroidal graphs. (Received August 17, 2015)