

**THE UNIVERSITY OF ALABAMA IN HUNTSVILLE  
MATHEMATICAL SCIENCES COLLOQUIUM**

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The Department of Mathematics  
Troy University

**Some Recent Results in the Classification of Edge-  
Regular Graphs**

**DATE: Friday, January 9, 2015**

**TIME: 3:00 p.m. – 4:00 p.m.**

**PLACE: Shelby Center 218**

A simple,  $d$ -regular graph on  $n$  vertices is said to be edge-regular if there exists a nonnegative integer  $\lambda$  such that every pair of adjacent vertices have exactly  $\lambda$  common neighbors. In any edge-regular graph, there is a parameter  $p = n - 2d + \lambda$  that is a measure of the common non-neighbors of any adjacent pair of vertices. It has recently been shown that for an edge regular graph with parameters  $n, d, p$ , where  $\lambda > 0$ , then  $n \leq 3\lambda + 3p$ . This is a sharp inequality; moreover, the extremal graphs for this inequality are unique for special values of  $\lambda$  and  $p$ . We overview some of the results centered around this inequality and some questions for future research.

**Refreshments will be served at 2:30 p.m. in SC 201 suite landing**