



University of  
Central Arkansas™

# DEPARTMENT OF MATHEMATICS MASTER THESIS DEFENSE

- Speaker:** **Jaime Garcia, Graduate Student  
Department of Mathematics**
- Title:** **Measuring the Impact of Research Funds  
in Collaborative Work Using Social  
Network Analysis—A Case Study**
- Date:** **Monday, August 3, 2015**
- Time:** **12:00—1:00 p.m.**
- Place:** **MCS 212**

**ABSTRACT:** Social network analysis (SNA) has been used extensively to study behavior of organizations, social networks such as Facebook and Twitter, political groups, and family relations. SNA helps us to understand how the network evolves over short and long time periods by identifying crucial members of the network in terms of connections with several other members of the network. In this study, we carry out SNA to measure the impact of research funds on researchers by analyzing their collaborative work. For this analysis, we used the number of publications of researchers is directly related to the impact of the research fund. In particular, we studied the impact of an Experimental Program to Stimulate Competitive Research (EPSCoR), a National Science Foundation (NSF) program, of Arkansas Advancing and Supporting Science, Engineering and Technology (ASSET II) on researchers in the state of Arkansas. We used the publications dataset available for a period of four years of the ASSET II project. We used the dataset to measure the impact both qualitatively, through social network graphs, and quantitatively, through statistical measures such as degree centrality, betweenness centrality, closeness centrality, and eigenvector centrality. We used the statistical software package R to achieve this. Through our analysis, we identified a list of key researchers who strengthened the collaborative network in terms of their contributions, importance and participation.