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**AGSOE 16: Networks: From Topology to Dynamics I**

Time: Thursday 9:30–10:15

Location: BAR 205

**Invited Talk** AGSOE 16.1 Thu 9:30 BAR 205  
**Group Path Formation in Physical and Abstract Spaces** —  
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Just as ants interact to form elaborate colonies and neurons interact to create structured thought, groups of people interact to create emergent organizations that the individuals may not understand or even perceive. One important class of collective behavior is self-organized path formation in situations where people are motivated to take advantage of the paths forged by others. We have developed two experimental scenarios for studying path formation using an internet-based experimental platform that allows groups of 2-200 people to interact with each other in real time on networked computers (<http://groups.psych.indiana.edu/>). The first scenario is physical, spatial path formation in which travelers earn points by moving be-

tween randomly selected destinations, while leaving trails that facilitate travel for subsequent travelers. The second scenario investigates abstract paths in a problem space in which participants choose between exploring their own solutions or following the paths found by neighbors in their imposed social network. Agent-based computational models provide useful accounts of the experimental results. Both scenarios reveal tradeoffs between exploration and exploitation, compromises between individuals using their own strategies and strategies obtained from their peers, and bridging relations between individuals' local decisions and group's ability to find globally good problem solutions.

**Also: Note the Joint Symposium of DY, BP and AG-SOE: Data Analysis in Complex Systems: From Data to Models. Details can be found in the program under SYCS or under [www.daics09.de](http://www.daics09.de).**