1064-92-37 **Ching-Shan Chou*** (chou@math.ohio-state.edu), 412 Math Tower, 231 W. 18th Ave, Columbus, OH 43210, and **Qing Nie** and **Tau-Mu Yi**. *Noise Filtering in Spatial Gradient Sensing and Response during Yeast Cell Polarization.*

Cells sense chemical spatial gradients and respond by polarizing internal components. This process is disrupted by gradient noise caused by fluctuations in chemical concentration. In this talk, I will discuss how gradient noise affects spatial sensing and response. In our study, we discovered that a combination of positive feedback, multiple signaling stages, and time-averaging produced good results. There was an important tradeoff, however, because filtering resulted in slower polarization. Using both modeling and experiments, we showed that yeast cells likely also combine the above three filtering mechanisms to achieve impressive spatial-noise tolerance, but with the consequence of a slow response time. (Received August 17, 2010)